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# AIR CONDITIONING AND REFRIGERATION News

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## INSIDE DOPE

*by GEORGE F. TAUBENECK*

**Stories of the Week**
**Never Miss a Trick**
**And It Never Snows In Florida**
**Fun Amongst the Rich**
**Newspaper Anecdotes**
**Notes on Human Nature (After a Convention)**
**American Success Story**
**Farmers Are Flush**
**Are Prices Too High?**

### *Stories of the Week*

The day before Southwestern was scheduled to play Northwestern in a traditional football game, the Southwestern dean announced that their triple-threat left halfback, Jughandle Jones, was ineligible. The coach rushed up to the front office to find out why.

"We caught him cheating yesterday," said the dean.

"I don't believe any of my players would cheat," the coach blustered. "What evidence do you have?"

"Well, Jughandle Jones sat right across the aisle from a Phi Beta Kappa during a history examination. When their papers were compared, it was found that the two "blue books" had identical answers to the first nine questions."

"But," screamed the coach, "that doesn't prove anything."

"You should have seen their answers to the tenth question," rejoined the dean. "The Phi Beta Kappa answered: 'I don't know.' And Jughandle wrote: 'I don't know either.' "

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Friend of ours from the South always closes his eyes when he takes a drink. One night we asked him to explain this peculiar habit.

"The sight of good likkah, suh," he vouchsafed, "always makes my mouth watah, and Ah do not care to dilute mah drink."

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From a spy in the Bell Telephone System, we hear that one of their operators recently answered an agitated signaling from a pay station, and heard a tearful feminine voice wail:

"Operator, can I have my nickel back? Russell won't talk to me!"

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This one is lifted from the archives:

"When does a woman stop hoping for romance?" a newspaper interviewer once asked a famous American beauty on her seventieth birthday.

"Goodness," replied the old lady, "I don't know *yet*."

### *Never Miss a Trick*

"I'm not long for this earth," groaned the dying president of an insurance company.

"Insert a new clause in my will. Give each man who has been in my employ, for more than fifty years, a $10,000 bequest."

"But Ezra," objected his lawyer, "our business is not yet thirty years old."

"I know," moaned Ezra, "but the publicity for the firm will be terrific!"

### *And It Never Snows In Florida*

Traveling through the wastelands of the Australian "out-back" region, a tourist stopped at a little wayside inn to get a bite to eat.

"How do you do?" he greeted the proprietor. "Looks like rain, doesn't it?"

A wistful expression crept over the

*(Concluded on Page 6, Column 1)*

## 8-Cu. Ft. Models Pace NEMA Sales During November

NEW YORK CITY—A 22% drop in the sale of 9 and 10-cu. ft. domestic refrigerators during November counteracted sales gains in almost all other sizes and pulled total unit sales for the month down 2½% below October, reports made by 14 household refrigerator manufacturers to the National Electrical Manufacturers Association have revealed.

Sales in the 9 to 10-cu. ft. category fell from 110,731 units in October to 86,377 in November.

World sales for these manufacturers numbered 388,881 units in November as compared to 398,249 in October. Of the November total, approximately 14,411 units were sold abroad.

For the 11 months of the year, world sales of from 11 to 14 Nema companies totalled 3,827,706 units. Foreign sales accounted for 181,475 of these.

Refrigerators of the 8-cu. ft. class outsold all others by a substantial margin in November but the 140,204 moved fell just a few hundred short of the October total. For the 11 months, the 8-cu. ft. category moved passed the 7-cu. ft. group to take the lead in total number sold. The 8-cu. ft. total is 1,151,981 and the 7-cu. ft. total is 1,139,505.

Largest sales gain was made in the 11 to 12-cu. ft. category which jumped from 6,634 units in October to 11,917 in November.

## Electromaster Sales Headed by R. R. Brown

MOUNT CLEMENS, Mich.—R. B. Marshall, president, Electromaster Inc., announced the appointment of R. R. Brown as sales manager, recently.

Brown, a 15-year sales veteran with the company, came up through the ranks. He was named district manager for the Illinois territory in 1934. During the war years he was the company's sales-contact representative to the Navy for electric range installations which were made in ships of all sizes.

Immediately after the war, Brown was appointed director of distribution. In this capacity, he helped to formulate the plan of a national sales organization which distributes the Electromaster ranges through a network of 70 distributors and over 8,000 dealers.

## Ansul Chemical Produces New Refrigeration Oil

MARINETTE, Wis.—An all-purpose refrigeration oil has been introduced by Ansul Chemical Co., manufacturer of refrigerants.

According to George B. Vermilye, sales manager, the oil is equally suitable for household refrigerators, home freezers, meat counters, domestic and commercial cold storage lockers, and all other refrigeration and air conditioning applications.

He said the oil does not separate wax down to -70° F. in oil-refrigerant mixtures. Ansul is a pioneer in wax-separation research.

"Ansul Oil is regularly Ansul-tested for low moisture content, low wax content, and high stability," the announcement declared. "The company's laboratory tests show the oil has a low pour point and will not decompose to form either sludges or acids."

The oil will be packaged in one gallon cans and will be on sale at refrigeration wholesalers. Shipments will be made directly from the Ansul plant at Marinette.

## Line Expansions Highlight ASHVE Show In Chicago

CHICAGO, Jan. 26—First visits to the International Heating & Ventilating Exposition here indicated that there is probably nothing "startlingly new" in the lineup of equipment for year-round air conditioning and comfort cooling for 1949, but there are a great number of refinements and an expansion of lines that will give air conditioning dealers plenty to work with in the coming season.

*(Complete coverage on the air conditioning phases of the Exposition, with pictures, will be published in the next issue of the News.)*

In the room cooler field Remington Corp. was showing what seemed to be the broadest line of both floor and window models. Fedders-Quigan was introducing its new floor models, and redesigned window conditioners. Frigidaire, Mitchell, Carrier, Viking, and Airtemp were among others with

*(Concluded on Page 21, Column 1)*

## Commercial Dealer Cost Manual Issued

CHICAGO—A report on "Commercial Refrigerator Dealers Operating Experience in 1947" prepared by Dun & Bradstreet for the Commercial Refrigerator Manufacturers Association has been published in pamphlet form as the CRMA "Dealers Operation Manual."

It is being distributed to dealer outlets of the sponsoring CRMA companies, and is available to other dealers at $1 a copy through the CRMA offices, 111 W. Washington St., Chicago. A discussion section explains how the individual dealer can make use of the survey material in guiding his business.

The survey covers the operating

*(Concluded on Page 4, Column 5)*

## Court Fines 3 G-E Dealers for Contempt

NEW YORK CITY—Fines of $100 each were levied against three local appliance dealers recently as they were found guilty of contempt of court for violating injunctions issued last June 8 to restrain them from cutting fair traded prices of General Electric products.

The three were Nathan Bolet, trading as Heins & Bolet, 88 Cortlandt St.; James Gary, trading as T. A. Gary, 16 E. 43rd St.; and Monarch Saphin Co., Inc., 56 W. 45th St.

The fines were imposed by Supreme Court Judge Ferdinance Pecora on the petition of the General Electric Co.

The manufacturer had also cited five other firms for violating similar injunctions but no action was reported on their cases.

Evidence introduced by General Electric was that of investigators who claim to have purchased fair-traded merchandise for less than the established price at times after the injunctions had been issued.

## Nickel's Worth Assured In 'Air Cooled' Phone Booth

NEW YORK CITY—Development of an "air conditioned" telephone booth has been announced by the Bell Telephone Co. The company said air in the booth will be changed several times a minute.

## NEWA Committee Urges Relaxing of Reg. W Terms

NEW YORK CITY—The Executive Committee of the National Electrical Wholesalers Association has advised the board of governors of the Federal Reserve System that, in its opinion, changes in the provisions of Regulation W are now vitally needed so far as radio, television, and electrical appliances are concerned.

Charles G. Pyle, managing director of N.E.W.A., in a telegram to Thomas B. McCabe, chairman, board of governors of the Federal Reserve System, specifically urged that the amount of down payments be reduced and payment terms extended in the public interest. Stated Pyle's telegram:

"It is the considered opinion of the executive committee of the National Electrical Wholesalers Association that changes in the provisions of Regulation W are now vitally needed so far as radio, television, and electrical appliances are concerned. Specifically, reduction in the amount of down payments and extension of payment terms are recommended.

"Unit production rates in these two fields are steadily mounting, to the point where supply is now amply adequate to consumer requirements. Modern radio, television, and appliances provide consumers new and more advantages. Present Regulation W provisions deter consumers from replacing worn and obsolete units to the detriment of their greater com-

*(Concluded on Page 4, Column 1)*

## Johnson Takes Over Sales for Admiral

CHICAGO—Advancement of W. C. Johnson to the newly-created post of vice president in charge of sales of Admiral Corp., manufacturer of electric ranges and refrigerators, radios, and television sets, has been announced by the board of directors.

Johnson has been in the radio and television field since 1928, and for the past two and one-half years had served as general sales manager of Admiral. Other positions held by Johnson since joining Admiral in 1944 were midwest regional sales manager and manager of field activities.

From 1941 to 1944 Johnson was general manager of the RCA distributor group in Minneapolis. Prior to that time he had served for 10 years with the RCA national organization in Chicago, Detroit, Minneapolis and, finally, in Camden where he was commercial manager of one of the Victrola divisions.

## New Moves Blunt Hope Of Bigger Metal Supply

WASHINGTON, D. C.—Industry hopes for increased supplies of steel, copper, and other scarce metals were blunted considerably by two government announcements made here last week.

One was the unanimous vote of the Senate Banking committee to extend the Commerce Department's voluntary allocations program covering steel and other scarce metals for seven months beyond the Feb. 28 expiration date.

This short-term extension is intended, the committee indicated, to give the President time to get his economic stabilization program through Congress. That program calls for a longer extension of voluntary allocations and standby, mandatory controls on distribution, price, and wages.

The second announcement was an

*(Concluded on Back Page, Column 2)*

## 4th Regional Conference by REMA-RSES Set

### *Nearly 70 Firms Listed for Exhibits as Birmingham Conference Opens Feb. 4*

BIRMINGHAM, Ala.—With the list of exhibitors grown to nearly 70, final details of the First Southern Refrigeration and Air Conditioning Educational Exhibit and Conference are being readied for the opening scheduled here for 12 noon, this Friday, Feb. 4.

Sponsored jointly by the Refrigeration Equipment Manufacturers Association and the Refrigeration Service Engineers Society, this is the fourth such regional event held in the past few months.

The Birmingham meeting will run for three days, Feb. 4, 5, and 6. Registration begins 9 a.m. Friday, the show opens at noon, at 3 p.m. there will be an RSES educational program, and from 7 to 10 p.m. the exhibits will again be open.

Saturday's schedule has the exhibits open from 9:30 a.m. to 12:30 p.m., an RSES educational program beginning at 1:30, with the banquet and entertainment to start at 6:30 p.m.

On Sunday the exhibits will be open from 10 a.m. to 4 p.m.

The exhibits themselves will be set up in the Birmingham Municipal Auditorium, but the RSES meetings and banquet are to be in the Tutwiler hotel.

Four talks have been announced for the RSES sessions as follows:

"The Heat Pump," by Paul B. Reed, educational director, RSES.

"Cold Plates and Their Application," by A. F. Sawyer, Dole Refrigeration Co.

"Driers and Drying Methods," by Dr. W. O. Walker, director of research and development, Ansul Chemical Co.

"Construction and Repair of Refrigeration Cabinets," by John H. Spence, service manager, Hussmann Refrigeration, Inc., and educational chairman, International RSES.

"Design & Application of Electric

*(Concluded on Page 4, Column 3)*

## IN THIS ISSUE

**"Radios and appliances are being** sold by dealers who do not add prestige to our business but degrade it." This was one of the many complaints aired by retailers participating in a panel discussion on manufacturer-distributor-dealer relations during the recent NARDA convention. For a full report on what they had to say, see **page 8.**

* * *

**One of the first air conditioning** systems installed in a hospital in the Rocky Mountain area has some unusual features. Turn to **page 5** for details on this 120-ton job.

* * *

**If you've been looking for educational** films on refrigeration service, home freezers, or major appliances, extracts from the new Nema guide of 16 mm. movies may provide the answer. See **page 17.**

* * *

**Is it possible for the serviceman to** make successful conversion to a capillary system? The research director of an industry company says yes—if certain instructions are followed. These instructions and other interesting information on capillaries are on **page 18.**

* * *

**Methods used by manufacturers to** test household refrigerator performance were detailed at the recent ASRE domestic refrigerator engineering conference. Some of these methods are outlined on **page 20.**

Available from 1/2 to 10 H.P.
CLEANABLE DOUBLE-TUBE COUNTER-FLOW WATER-COOLED CONDENSERS
Write for literature
Halstead & Mitchell
BESSEMER BLDG.
PITTSBURGH 22, PA.

WILSON
REFRIGERATION, INC.
• FARM AND HOME FREEZERS
• REACH-IN REFRIGERATORS
• WALK-IN REFRIGERATORS
• FARM MILK COOLERS
DIVISION OF WILSON CABINET CO., INC.
SMYRNA • DELAWARE

Superior
VALVES, FITTINGS and ACCESSORIES
For All Refrigeration and Air Conditioning Systems
Superior Valve and Fittings Co.
PITTSBURGH 25, PENNA.

## Sears, Ward Spring Catalogs Show Lower Prices on Many Models

CHICAGO — Spring catalogs recently issued by Sears, Roebuck & Co. and Montgomery Ward & Co. reveal slightly lower prices on some major appliance lines particularly refrigeration equipment, bringing them in line with price reductions announced late last year for their retail stores.

Only price increases were on a Ward standard range which was boosted from $159.95 in the fall catalog to $164.95 in the new book and on a standard 7.5-cu. ft. refrigerator up from $189.95 to $194.95.

Sears chopped $5 and $30 off two refrigerator models. The 7.3-cu. ft. Coldspot that was formerly $194.95 is now listed at $189.95. The 9.4-cu. ft. model was $259.95 and is now $229.95. No change was made in the price of the 7.3-cu. ft. "Spacemaster" which is selling at $219.95.

On freezers, the mail order house reduced the price of its 18.5-cu. ft. model from $429.95 to $419.95. The 12.7-cu. ft. unit is dropped from $349.50 to $339.50. The 6.2-cu. ft. model slid from $219.50 down to $214.50.

Five dollars was shaved from the price of two ironer models. One now retails for $142.95 and the other $122.95. A third ironer priced at $102.95 was added to the catalog offerings.

No price reductions on washers or electric ranges was noted.

Montgomery Ward's only reductions amounted to $5 off the price of three refrigerator models and $15 off a fourth. The big reduction was made on the 9.5-cu. ft. Supreme model bringing its price to $284.95. The lesser reductions were made on a 7.5-cu. ft. Supreme, now $239.95; a 7.5-cu. ft. Deluxe, $214.95; and a 9.5-cu. ft. Deluxe, $249.95.

New additions to the Montgomery Ward book were two freezer models. One was a 7.2-cu. ft. unit priced at $229.95 and the other a 12.5-cu. ft. unit at $344.95.

## Don F. Smith Retires; 3 Others Named at G-E

ERIE, Pa.—With the retirement from active service of Don F. Smith, assistant Works manager, three appointments within the executive staff of Erie Works, General Electric Co., were announced by Works manager, H. L. R. Emmet, recently.

Bertram Miller, assistant of the Works manager, becomes assistant Works manager.

R. C. Reed, supervisor of personnel, is named assistant to the Works manager.

C. A. Traphagen, assistant supervisor of personnel, is appointed supervisor of personnel.

## Kinetic Official To Discuss 'Freon' for Detroit ASRE

DETROIT—"Types of 'Freon' Refrigerants" will be discussed by R. L. Williams of Kinetic Chemicals, Inc. before the Detroit Section, American Society of Refrigerating Engineers, at 8 p.m. Monday, Feb. 7, at the Rackham bldg. here.

## Refrigerator Sales Hit 3,827,706

**Nema Sales for November and First 11 Months of 1948**
**Complete Refrigerators Only**
**(Lacquer and Porcelain Exterior Cabinets) (Advertised Sizes)**

**NOVEMBER (14 Companies)**

| | Sizes | Domestic (48 States and D. C.) | Canadian | Other Foreign | Total |
|---|---|---|---|---|---|
| 1. | Less than 4 cu. ft. | 302 | .... | .... | 302 |
| 2. | 4 cu. ft. | 2,419 | .... | .... | 2,419 |
| 3. | 5 cu. ft. | .... | .... | .... | .... |
| 4. | 6 cu. ft. | 45,687 | .... | 5,205 | 50,892 |
| 5. | 7 cu. ft. | 92,799 | .... | 3,970 | 96,769 |
| 6. | 8 cu. ft. | 137,629 | .... | 2,575 | 140,204 |
| 7. | 9 and 10 cu. ft. | 84,055 | .... | 2,322 | 86,377 |
| 8. | 11 and 12 cu. ft. | 11,578 | .... | 339 | 11,917 |
| 9. | 13 cu. ft. and up | 1 | .... | .... | 1 |
| 10. | **Total** | **374,470** | .... | **14,411** | **388,881** |

**FIRST 11 MONTHS (14-11 Companies)**

| | Sizes | Domestic (48 States and D. C.) | Canadian | Other Foreign | Total |
|---|---|---|---|---|---|
| 1. | Less than 4 cu. ft. | 3,293 | .... | 17 | 3,310 |
| 2. | 4 cu. ft. | 16,831 | .... | 216 | 17,047 |
| 3. | 5 cu. ft. | 268 | .... | .... | 268 |
| 4. | 6 cu. ft. | 416,057 | .... | 40,929 | 456,986 |
| 5. | 7 cu. ft. | 1,070,669 | 705 | 68,131 | 1,139,505 |
| 6. | 8 cu. ft. | 1,109,347 | 91 | 42,543 | 1,151,981 |
| 7. | 9 and 10 cu. ft. | 926,680 | 3 | 27,322 | 954,005 |
| 8. | 11 and 12 cu. ft. | 102,261 | 1 | 2,317 | 104,579 |
| 9. | 13 cu. ft. and up | 25 | .... | .... | 25 |
| 10. | **Total** | **3,645,431** | **800** | **181,475** | **3,827,706** |

Participating companies: Admiral Corp.; Crosley Div., Avco Mfg. Corp.; The Coolerator Co.; Frigidaire Div., General Motors Corp.; General Electric Co.; Gibson Refrigerator Co.; Hotpoint, Inc.; International Harvester Co. (In 4-1-48); Kelvinator Div., Nash-Kelvinator Corp.; Norge Div., Borg-Warner Corp.; Sanitary Refrigerator Co. (In 9-1-48); Seeger Refrigerator Co.; Stoddard Mfg. Co. (In 6-1-48); Westinghouse Electric Corp.

## 11-Mo. Vacuum Cleaner Volume Falls Below Figure of 1947

CLEVELAND—November factory sales of household vacuum cleaners totaled 255,080, the Vacuum Cleaner Manufacturers Association reported recently, 9.4% below the October figure and 27.2% below November, 1947.

For the first 11 months of the year, sales totaled 3,086,969. This was somewhat below the 3,427,433 score for the first 11 months of 1947.

The association noted that sales since the war have already passed the 9,000,000 mark—a point it took the industry nine years to reach before the war.

## Electromaster Stockholders OK Acquisition by Philco

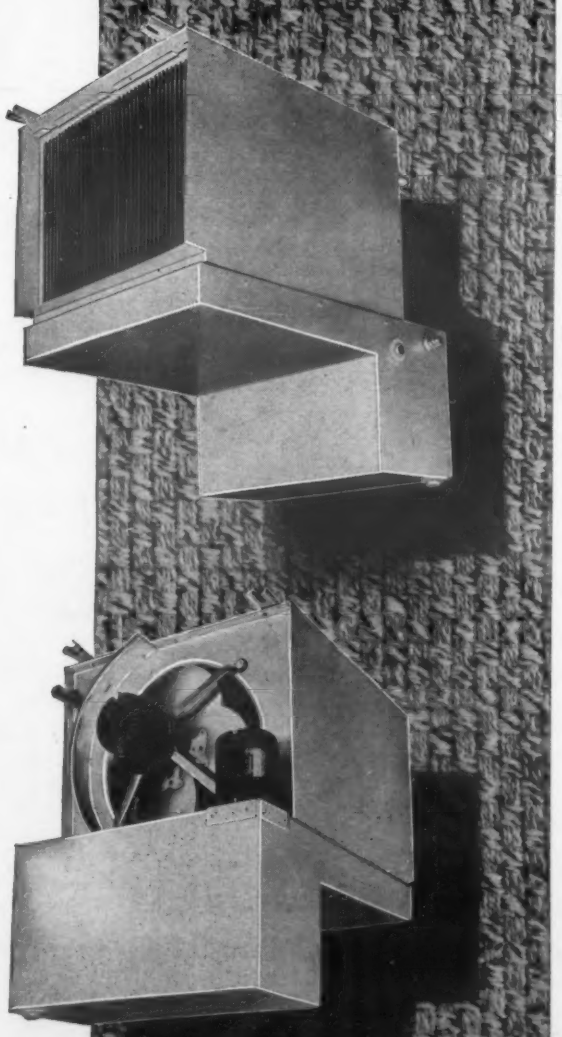
MOUNT CLEMENS, Mich.—R. B. Marshall, president of Electromaster Inc., has announced that shareholders of the corporation recently approved the proposal whereby Philco Corp. will acquire all the assets of Electromaster.

Over 85% of the shares were voted in favor of the plan.

## Washer, Basket, Soap Offered

BUFFALO—Schwegler Bros. upped washer sales with a three-way offer of a washer, folding laundry basket, and 30 boxes of soap flakes for $89.50.

The First Really New
EVAPORATIVE CONDENSER
by KRAMER



Opens Many Opportunities in the Small Tonnage Field

Featuring . . .

- Small Capacities—2 to 8 tons
- Single or Multi-Circuits
- Stainless Steel Sump
- Extra Large Water Delivery
- Packless & Greaseless Pump
- Bare Tube Coils
- No Nozzles
- No Belts
- Low Cost
- For Freon, Methyl and Ammonia

WRITE FOR BULLETIN R162B

KRAMER TRENTON CO.
Trenton 5, N. J.

THE NEW FOGEL CONTINUOUS "OPEN-STYLE" SELF-SERVICE FROZEN FOOD CASE

MODEL FCO-8
(Removable ends permit addition of new sections for continuous line of display)

Excitingly New . . .

DEALERS . . . FOOD MERCHANTS . . . SHOPPERS . . .

All, are talking about the *excitingly new* FOGEL Continuous "Open-Style" Self-Service Frozen Food Display Case. The case that increases sales and profits through *"Direct-Vision" (*scientific angle of display that offers full, unobstructed vision of the products being displayed).

Another FOGEL *"first"*, the FCO-8 is one of the greatest sales opportunities to hit the commercial refrigeration market in years.

CHECK THESE OUTSTANDING ADVANTAGES
√ Endless "Add-A-Section" Construction
√ Convenient "Finger-Tip" Shopping Height
√ Greater Display Area
√ Advanced, Streamlined Design
√ Beautiful Porcelain Finish
√ Fluorescent Interior Lights

Write TODAY for full particulars concerning this amazing new case, or any item from the FOGEL line, *one of the most complete in the refrigeration industry.*

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FOGEL REFRIGERATOR COMPANY
5400 EADOM STREET • PHILADELPHIA 37, PA.
*Quality manufacturers, for almost one-half century, of Display Cases, Reach-Ins, Walk-Ins, and Freezers.*

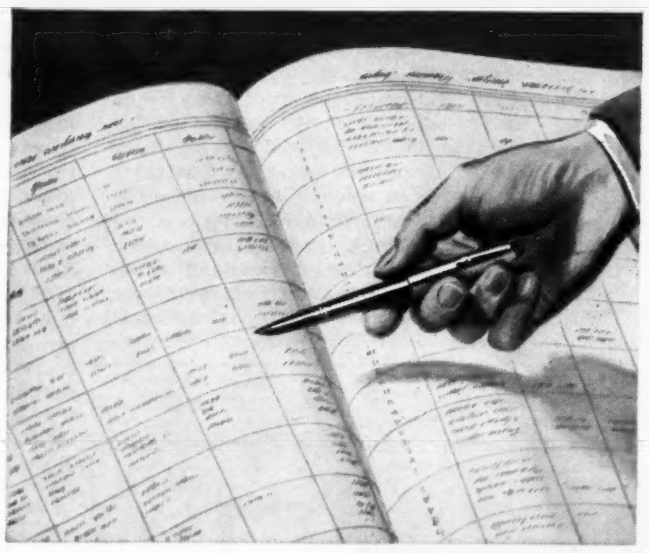
# How Frigidaire's Distributing Organization Helps Frigidaire Dealers Build Better Business

Through its nationwide distributing organization, Frigidaire gives dealers business-building services unsurpassed in the industry. This help is provided by thoroughly trained specialists and covers every phase of the dealer's business—as shown in the pictures below.

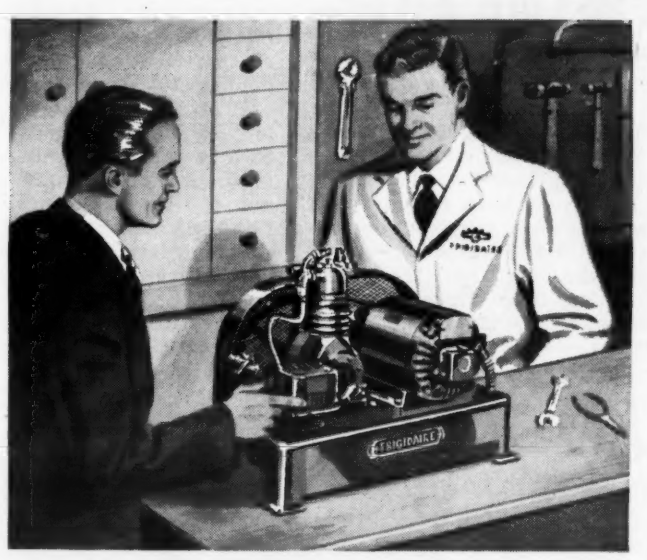
Frigidaire specialists in 43 strategically located district headquarters offices assist dealers with specific, constructive counsel, quickly available—and it is based on years of experience of successful Frigidaire Dealers.

That's dealer help of a mighty practical kind. And it's only one of the many reasons why a Frigidaire franchise is so valuable.

**Sales Management.** District sales engineering specialists assist dealers in building their sales organizations, originate and develop sales programs keyed to individual local situations, aid in analyzing the sales potential of each dealer's market, distribute market and product information.



**Finance.** Frigidaire's district office personnel are prepared to give their expert assistance on business management problems, outline sound accounting procedures and provide helpful guidance on the dealer's financial matters of every kind. This help is readily available at all times.




**Service.** Frigidaire's District Service experts assist dealers in maintaining high service standards by giving their expert help with the dealer's service training programs, maintain large parts supply for retail requisition, provide proved methods of obtaining more service business and profit.

**Sales Promotion and Training.** District sales promotion departments assist dealers with their advertising plans, conduct sales and product schools for salesmen, aid in organizing successful dealer sales meetings and training programs, provide proper methods of obtaining new business.

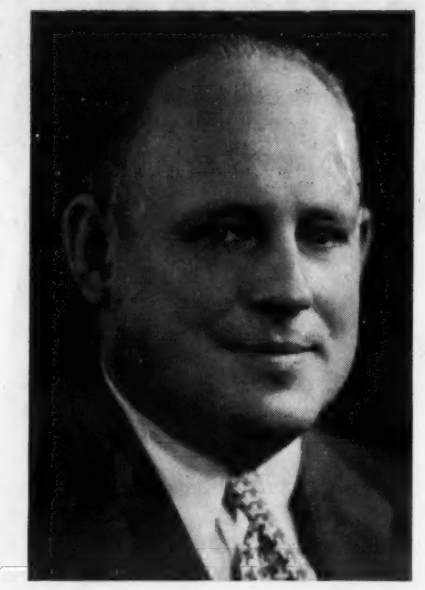
**Sales Engineering.** District sales engineering help on technical problems is available to commercial and air conditioning dealers. Thoroughly qualified engineers act as technical consultants to dealer personnel on the application, layout and specifications of Frigidaire installations.

**Home Economics.** District home economists build good will for Frigidaire dealers with schools, home demonstration agents, and other interested groups. They also assist and train dealers and their home demonstrators to help customers enjoy full satisfaction with Frigidaire products.

**Division Managers.** These key men keep in close contact with the dealer and provide frequent and on-the-spot assistance in all phases of the dealer's operations. They are qualified through knowledge of many dealer operations to help with many sales and management problems.

## Depend on FRIGIDAIRE to do things right

## Promoted at Admiral



Wallace C. Johnson has recently been appointed to the newly created post of vice president in charge of sales at Admiral Corp.

## Reg. W Curb Asked--

*(Concluded from Page 1, Column 4)*

fort, convenience, and financial benefit.

"Adoption of recommended changes would alleviate this condition. The industry would, thereby, be aided in maintaining high level employment; and the public in greater numbers could avail themselves of the enjoyment and the more healthful, comfortable living these modern electrical conveniences so economically provide.

## Ultra-Cold Introduces 4 New Domestic Models

LOS ANGELES—Ultra-Cold, Inc., here is now in production on four new domestic refrigerator models, according to Carl Conkle, president.

They are models 80-A De Luxe, 80-F Super De Luxe, 95-A De Luxe, and 95-F Super De Luxe.

Model 80-A, of 8-cu. ft. plus capacity, has a full-length door. The refrigerator is 60 in. high, 30 in. wide, and 26 in. deep. Its 1-cu. ft. stainless steel frozen food chest includes a four-tray ice maker. Also featured is automatic interior lighting, pull-out meat compartment, and pull-out fruit and vegetable crisper.

Model 80-F has the same dimensions as the model 80-A, but it contains a full-width, "below-zero" frozen food compartment of approximately 1½ cu. ft. According to Ultra-Cold, this cabinet "is actually a combination freezer-refrigerator."

Also measuring 60 in. high, 30 in. wide, and 26 in. deep, model 95-A has a capacity of approximately 9½ cu. ft. Features include a full-length door, fruit and vegetable crisper, pull-out meat compartment, interior lighting, and a "sub-zero" storage compartment said to be capable of holding 25 lbs. of frozen foods.

Of the same external dimensions and capacity as model 95-A, model 95-F features a full-width frozen food chest of approximately 2 cu. ft. and a 1-cu. ft. ice tray chest. Also fitted with the top-to-bottom door, this unit reportedly takes no more floor space than the former 7-cu. ft. model.

All cabinets are equipped with hermetically-sealed compressors.

## REMA-RSES Conference Opens--

*(Concluded from Page 1, Column 5)*

Controls," by R. H. Luscombe, sales manager, Penn Electric Switch Co.

There will also be a series of "educational briefs" featuring short talks by factory experts on refrigeration problems plus motion pictures and slide films running throughout the program.

The program of "briefs" was announced as follows:

"Solving Your Moisture Problems," a talk by K. M. Newcum of Remco, Inc.; "The Thermobank," an illustrated talk by S. C. Segal of Kramer Trenton Co.; "Testing Technique and Refrigeration Service Aids," a demonstration and talk by E. C. Williams, Airserco Mfg. Co., Inc.

"Principles of Refrigeration" and "Adding or Removing Refrigerant," two short films presented by R. H. Israel of Virginia Smelting Co.; "Suction Line Regulators," an illustrated talk by W. P. Myers of Alco Valve Co.

"The Application and Installation of Thermostats," a talk by B. O. Haun of Spencer Thermostat Co.; "Dehydration Methods from the Standpoint of the Valve Manufacturer," a talk by Frank Carter of Detroit Lubricator Co.; "Thermostatic Expansion Valves," an illustrated talk by W. F. Wischmeyer of Sporlan Valve Co.; and "It All Adds Up to Better Service . . . Customer Goodwill," a sound film presented by Westinghouse Electric Corp.

Eleven companies have been added to the list of exhibitors and three withdrawn. Additions include Black, Sivall & Bryson, Inc.; Carrier Corp.; Chicago Seal Co.; Federal Refrigerator Mfg. Co.; Linde Air Products Co.; Lynch Corp.; Pacific Lumber Co.; Ultra-Violet Products, Inc.; Wagner Electric Corp.; Weatherhead Co.; and Williams Refrigeration, Inc.

Companies previously announced as displaying but not included in the latest list are National Production & Sales, Inc.; Refrigeration Corp. of America; and The Texas Co.

Commenting on the success of the three previous conferences held in San Francisco, Boston, and Chicago, H. F. Hildreth, president of REMA, said, "We are more than pleased with the success of the educational conferences. In fact, these conferences have been hailed by service engineers, wholesalers, contractors, and manufacturers as serving a very useful educational service.

"However, their purpose should not be confused with that of the Sixth All-Industry Exposition. Each serves a different purpose and each has a distinctly different place in our activities."

"The entire purpose of the All-Industry Exposition is to increase sales," explains H. F. Spoehrer, chairman of Rema's educational committee and also head of the Sixth All-Industry Exposition committee.

"The visitor to the All-Industry Exposition attends primarily in order to compare the price and quality of the various kinds of equipment. No other place in the world can he see so many kinds or so much refrigeration and air conditioning equipment in one place at one time."

The Birmingham sessions will be open to the entire refrigeration and air conditioning industries with only a registration fee of $1 to cover necessary expenses.

Hosts for this conference are the Alabama State Association and the Birmingham chapter of RSES. Robert Gennett is general chairman of the event, aided by C. S. Tucker, International RSES director, J. M. Manley, president of the Alabama state group, and the following committee chairmen: E. V. Oakwood, George Tribble, N. F. Brown, and Floyd Corbin.

## Commercial Manual--

*(Concluded from Page 1, Column 3)*

averages of 94 commercial refrigerator dealers in various sized communities. A similar study, issued in 1946, covered operations in the pre-war year of 1941 and the first six months of 1945.

These are some of the highlights of the survey:

The typical commercial dealer covered in the 1947 survey operated at a net profit of 6.1% on net sales of $250,000.

Average sales volume increased in 1947 to more than double the 1945 level and to four times the 1941 volume.

*(A more detailed analysis of this commercial refrigerator dealers' operating experience survey will be published in a later issue.)*

Compared with 1941 and 1945, gross profit was somewhat lower in 1947, and operating expenses were less, leaving net profit about midway between the 3.7% earned in 1941 and the 10.4% averaged in 1945.

Inventories in 1947 increased by about 35%, with the largest proportionate increases reported by the smallest dealers.

On the financing of credit requirements, the reporting dealers showed a distinct preference for discounting with finance companies, and a substantial amount of advance arrangement of credit accommodation.

## Louden, Bergdoll, Consley Are York Vice Presidents

YORK, Pa.—Three new vice presidents for the York Corp. here were elected recently by the firm's board of directors. The new vice presidents are:

J. Keith Louden, vice president and assistant to the president.

John G. Bergdoll, vice president and works manager.

John C. Consley, vice president and chief engineer.

In addition, William F. Lynne was appointed an assistant secretary.

All other officers of the company were re-elected.

Louden came to York as assistant to the president about six months ago. Prior to that he was manager of glass and closure production of Armstrong Cork Co. in Lancaster, Pa. Louden's responsibilities are largely in connection with the administration of manufacturing and engineering activities.

Bergdoll has been with York and its predecessors for more than 28 years, in the past five years as works manager.

Consley has been with York for more than 24 years and has for the past five years been in charge of the engineering division.

Lynne has been with York for 13 years and is now assistant controller of the company.

## Wm. Brown, Jr. Elected To Board of Directors At Liquid Carbonic Corp.

CHICAGO—William A. Brown, Jr., vice president of the Liquid Carbonic Corp. in charge of the compressed gas division, was elected a director to the board at the recent annual meeting of stockholders.

W. A. Brown, Jr.

Brown started his work with Liquid in the sales department of the compressed gas division in 1935 and became assistant gas sales manager in 1937.

In 1943 he was elected vice president in charge of the compressed gas division. He is also president of the Liquid Carbonic Corp. of Cuba, and president of Stuart Oxygen Co., San Francisco.

Also elected were D. J. Will, former president of Stuart Oxygen Co., acquired by Liquid recently, and Patrick Coyne, president of Pacific Carbide & Alloys Co. of Portland, Ore.

This now increases the members from 11 to 14.

## Frozen Food Authority Dies En Route to Convention

PHILADELPHIA—Harry Carlton, an authority on frozen foods, was found dead here on Jan. 14 in his train berth while en route to the National Canners Association Convention in Atlantic City.

Carlton, who was 53 years old, had been scheduled to address the convention. A faculty member of the University of Tennessee, he was on a year's leave of absence which he was filling by traveling around the country lecturing on frozen foods, according to John T. Stern, local frozen food agent for the U. S. Department of Agriculture, who helped to identify the body.

Carlton was formerly associated with the Tennessee Valley Authority as an expert in the frozen food division. He made his home in Knoxville.

## REMA Announces Names Of 5 New Member Firms

WASHINGTON, D. C.—The Refrigeration Equipment Manufacturers Association announces that five companies recently joined the organization. The companies and the industry products they manufacture are:

Delavan Mfg. Co., Des Moines, Iowa, replacement parts for compressors; Kingston Products Co., Tipton, Ind., milk can coolers; Emil Steinhorst & Sons, Inc., Utica, N. Y. farm and home freezers and electric milk coolers; Wabash Mfg. Co., Chicago, refrigerant dehydrators, line filters, oil separators, capillary tube assemblies and kits, high side floats, charging hose and accessories; and Ultra Violet Products, Inc., Los Angeles, ultra violet germicidal lamps.

Just look at the inside

Have you ever seen a cleaner, brighter finish? The inside of Wolverine Copper Refrigeration Tubing is smooth, dry, clean, and uniform—every inch of it—making its use most efficient, dependable, and economical.

It comes to you now in 50-ft. coils, individually cartoned so it is easy to buy, handle, stock, merchandise, reship, inventory, and use.

There IS a difference in tubing—specify Wolverine.

WOLVERINE TUBE DIVISION
CALUMET AND HECLA CONSOLIDATED COPPER COMPANY
INCORPORATED
MANUFACTURERS OF SEAMLESS NON-FERROUS TUBING
1413 CENTRAL AVENUE • DETROIT 9, MICHIGAN

WHITE
PORCELAIN ENAMELLED SHEETS
Made from prime enamelling steel. Other colors available. Can take on a limited number of new accounts for steady supply.
QUALITY PORCELAIN ENAMEL MFG. CORP.
228 Lalor St., Trenton, N. J.

# 120-Ton Air Conditioning System In Hospital Uses 100% Fresh Air, Controls Explosion Risk

DENVER—Claimed to be one of the first air conditioning systems ever installed in a hospital in the Rocky Mountain area, a 120-ton system was recently put in the new $2,600,000 General Rose Memorial hospital here.

Harry H. Herman, local plumbing, heating, and air conditioning contractor, handled the job, which, he said, contains features unusual even for specialized hospital air conditioning.

The hospital, claimed to be the most modern in the nation, was dedicated to the memory of General Maurice Rose, Denver officer who was killed in Germany in 1945. All funds for the six-story, 250-bed institution were raised by subscription—even to paying for the most advanced therapuetic equipment from comfort cooling to a $50,000 X-ray machine.

Despite the cool over-all summer temperatures prevalent here, it was considered necessary to provide precisely controlled temperatures throughout the hospital for the benefit of patients suffering from allergies, respiratory diseases, and cancer.

### TWO 60-TON COMPRESSORS

As installed, the system is based on two 60-ton Westinghouse compressors and mixing chambers. These are separately housed in a third floor penthouse at the rear of the T-shaped building, and in another penthouse atop the roof.

The third floor unit, which contains plenum chamber, electronic filters, blowers providing 70,000 c.f.m. pressure, cools the basement, public lobby, and first three floors of the hospital.

The roof penthouse installation provides conditioning for the upper floors, operating room, nursery, and other points where air conditioning is vital to health and recovery.

The cooling towers for each compressor are located at the rear roof of the building, where maximum shadow gives best cooling efficiency.

Each compressor can be operated independently, with thermostats in each room combined with dampers giving any desired temperature and humidity. Westinghouse hermetically sealed units, using "Freon", are installed in each penthouse.

To do away with "hospital odor" and give freshness in the rooms and corridors, the General Rose system circulates 100% fresh air, which is drawn through electromatic filters for pollen and dust removal, and passed over finned coils in the cooling units.

### EXHAUST AIR 'BURNED UP'

Exhaust air, when removed from every part of the hospital, is not discharged through the roof as usual. Instead it is passed through a duct 300 ft. long to the boiler room located in a separate building behind the hospital.

After passing through two 250-hp. boilers which provide heat, all odors are actually "burned up" away from the building.

In the operating wing, where five tiled operating rooms are located, warmed and cold air is brought to each room by means of separate stainless steel ducts. By means of thermostats and dampers in each, the right proportion of air is passed into the room for best operating temperatures.

Air is introduced through Pyle-National perforated plates, which do away with drafts.

In the public rooms, such as lounge, barber shop, and snack bar, circulation is by means of anemostats in two rows on either side of the rooms, one row discharging the air and the other exhausting it.

Eighteen rooms are set aside for allergy patients. By means of separate thermostats on heating equipment, cold and warm air ducts, plus humidistat installations, temperature and relative humidity can be controlled within half a degree over a 24 hour period.

This permits patients to be "baked" or "chilled" according to the treatment specified without leaving their sickrooms. The same controls are used in connection with respiratory tract sufferers.

Another vitally-important innovation in the air conditioning system is the controlling of explosion danger in the operating rooms, where inflammatory anaesthetics are necessary.

### ANESTHETIC EXPLOSIONS

Here, each room has a terrazzo floor, containing brass strips to ground out all static electricity. Two ducts into the rooms supply warm and cold air, controlled by a sensitive thermostat, coupled with a humidistat and lever to raise or lower humidity.

When very high humidity is required for an operation, the control lever is moved, introducing live steam into the stainless steel air conditioning duct, to bring humidity up to 90% or more if required.

This "saturated air" does away with explosion danger completely, and is the first such air conditioning design to be worked out for any hospital, according to the Denver air conditioning contractor.

Ductwork throughout both systems is so arranged that live steam may be blown through for cleaning at periodic intervals. This eliminates tedious duct section removal, Herman indicated.

Each of the sickrooms through the hospital has a private bathroom. For ridding the atmosphere of bath odors, there is a special exhaust duct in the ceiling of each, with separate ductwork leading to the outside boiler room building.

Pulling 25,000 c.f.m. of air, the 250 duct inlets remove all odors at high velocity, conveying them to the boilers, and passing them through the firebox, to consume every unpleasant odor immediately. Suction is provided by channeling these ducts to the main air conditioning exhaust system.

### BASEMENT KITCHEN ALSO COOLED

The exhaust system from the hospital's toilets (all public and employes' lavatories are included) consists entirely of long U-bends so that noise will not be carried from one lavatory to another.

Still another innovation in the air conditioning system which required much planning was the installation of complete cooling facilities in the large basement kitchen which is a 100% stainless steel layout, designed to serve 2,000 meals per day.

Filtered, cooled air from the third-floor penthouse air conditioning room is brought down by stainless steel ducts to a rectangular grille housing which completely encloses the hot range and steam table area.

Twenty-four outlets radiate the cooled air at 76° F. out over the entire interior of the kitchen, with a booster blower for higher velocity to overcome high heat loads during preparation periods.

Tests have shown temperature seldom exceeds 80° F. when all heat producing equipment is in operation simultaneously, according to the contractor.

After the air has circulated through the kitchen, it is exhausted only through the stainless kitchen hood over cooking appliances. Picked up by an exhaust fan, the air is passed first through filters which remove all grease, and then into a traveler duct, running underground, which also ends up in the boiler room.

### STEAM CLEANS DUCTWORK

In this way all kitchen odors are carried 300 ft. away, and are burned up in boiler flues before eventually reaching outside air. Two exhaust fans pull the air away, and provide pressure into the boiler flues.

Ductwork in all of the building is stainless steel, and provided with steam connections for ready cleaning at any time.

All fans, for exhaust and input, are installed in double with either one capable of pulling an average load, with the other one for reserve pressure.

There are thermostat controls in 14 zones for public rooms and corridors, plus the individual thermostats in deluxe rooms for patients.

Along with the air conditioning system, Johnson & Davis, plumbing and heating contractors, cooperated with Herman in the installation of radiant heating under the floors of the public areas, nursery, and operating rooms.

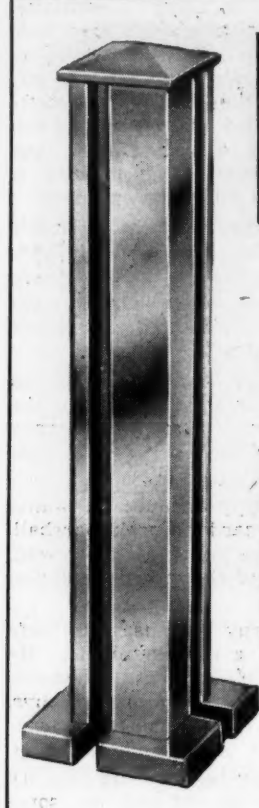
Radiant heat, it has been found, works in better teamwork with comfort cooling for these functional departments, with no "heat pools" to be contended with anywhere in the building. The radiant heating system is said to be the first ever installed in a hospital.

### GUARANTEED AGAINST STRIKE OR POWER FAILURE

Other heating in the private rooms is by means of convector radiators, controlled at each room with a valve system. In those rooms devoted to treatment requiring delicate heat control, Johnson & Davis installed thermostats on each radiator, which jibe with the air conditioning controls for exact control.

In addition to standard utility power service, operation of the air conditioning system is guaranteed by a 31-kilovolt generator and gasoline powered engine in the basement power plant, plus a battery storage system which will operate it for 24 or more hours without other power.

"Air conditioning must do many more jobs than mere comfort cooling in this type of institution" the contractor pointed out, "and therefore we've guaranteed against any strike or power failure putting it out of service."

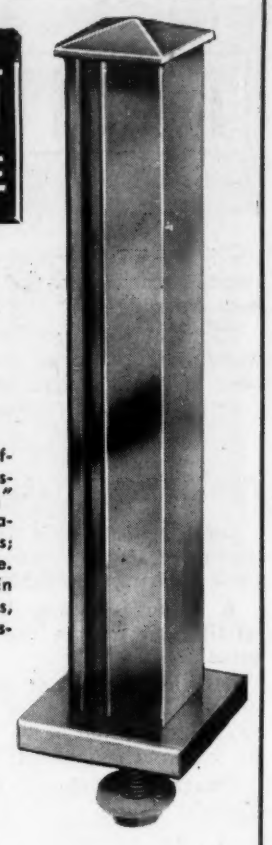



KASON HARDWARE

COUNTER POSTS

FOR SELF-SERVICE REFRIGERATOR CASES

We manufacture Counter Posts for self-service refrigerators. The Posts illustrated are stock models made of 1¼" square-brass tubing; bases and ornament caps are made of forged brass; beautifully finished in polished chrome. Grooved for ¼" glass. Furnished in heights desired and in corner-posts, center-posts and end-posts as illustrated below.



POSTS OF SPECIAL DESIGN

We also manufacture Counter Posts to customers' special specifications and designs. Consult us regarding your requirements.

KASON HARDWARE CORPORATION

127-137 Wallabout St., Brooklyn 6, N. Y.



A Complete Line FOR EVERY AIR CONDITIONING NEED

TYPHOON

Year-in, year-out economy and efficiency give Typhoon distributors an unbeatable talking point. Ruggedly engineered for trouble-free performance, over-size components insure full-rated capacity at all times. A complete line of air conditioning equipment that adds up to complete customer satisfaction.

Every Typhoon distributor has the shoulder-to-shoulder cooperation of an organization with 40 years of air conditioning experience.

Easy to sell, easy to install, easy to service.

Tie Up with TYPHOON

Nationally advertised in top publications . . . backed by a sales-winning program of dealer promotion and sales-training.

COMPRESSORS

Compact ½-ton to 50-ton units to deliver maximum refrigeration at minimum cost.

LOW SIDE UNIT

Made for use remote from the compressor unit. Comes complete with filters and multi-outlet expansion valve.

TYPHOON AIR CONDITIONING CO., INC.

794 UNION STREET · DEPT. AN 5 · BROOKLYN 15, N. Y.

# INSIDE DOPE

by GEORGE F. TAUBENECK

*(Concluded from Page 1, Column 1)*

gnarled features of the leathered old restaurateur.

"Gosh, I hope so," he murmured wishfully. "Not so much for my sake as for my son's sake."

"I saw some rain, once."

## *Fun Amongst the Rich*

Driving downtown last week, we passed a highly colorful wedding party leaving a swanky church.

A string of cars, horns blowing wildly, followed in the wake of the bridal car.

On the rear end of the latter were no attached shoes or rattling tin cans, but we did see a large placard on which was printed:

"Married Today; Hot Springs Tonight."

## *Newspaper Anecdotes*

A late publisher of the *New York Times* was scheduled to meet the President of Cuba, so the story goes. This publisher had studied Spanish in college, but had forgotten practically everything but one phrase: "I regret exceedingly that I am not too familiar with Spanish."

When he was introduced to the Cuban President, at the appointed time, he did his best to pronounce this sentence in Spanish. The eyebrows of the distinguished Cuban gentleman rose in amazement. Their interpreter hastily ejected a stream of explanation, and the day was saved.

"I wouldn't say that again," suggested the interpreter, confidentially.

"Why not? What was wrong?"

"What you said was, 'Lick yourself, you poor thing, your snout's greasy.'"

Annoyed at a youngish girl reporter who turned in an inaccurate news story, the grumpy city editor indulged himself in a lecture.

"Toots," he growled, "you must learn to get things right. Accuracy is to a newspaper what virtue is to a woman."

"Ain't it the truth," the girl blurted out bitterly, "but a newspaper can print a retraction."

## *Notes on Human Nature (After a Convention)*

Poker players are uniformly happy (oh, yeah)? They are cheerful, and courteous, and considerate to everybody . . . except, perhaps, the guy who won the last pot.

To prove this point, we need only to barge into Room 1239 of the Biltless hotel on the first night of a refrigeration industry conclave. Here we find nine players and four kibitzers crowded into a cluttered-up suite. Their coats and ties are off, and the suite smells like a veterinary's valise. The joint looks like the hindside-end of a catastrophe, but the poker players therein are a happy, carefree lot. For example:

George is happy because he hasn't held a card higher than a 10 all night.

Phil is happy because he has drawn a lot of picture cards—all of them when somebody else had a straight flush or four of a kind.

Gus is happy because he noted that one player didn't ante in the last pot he won. Brooding merrily over this, he himself neglects to ante in the next six pots.

Harry is happy because he wants to play seven-card no-peek baseball, with deuces and cockeyed jacks wild, while the rest of the crowd insists on straight stud.

Mac is happy because his wife wanted to see a certain movie. He wanted to see it, too. But when she insisted that he not join the boys, what could he do? Business is business, isn't it? Besides, he's losing.

Fred is happy because his wife insisted that he "go out and win some dough." Why couldn't she resent his poker playing like other wives? Is she after a new fur coat? Who comes in when he goes out?

Herman, the big loser, is especially happy because he thinks he can't afford to lose a dollar.

And Jim, the big winner, is the only unhappy man present. He hates to win from his close friends. So he is planning to cash in his chips and go home after the next round . . . if he doesn't win seven out of the next eight pots.

Ed doesn't give a damn what happens, because he enjoys being with good fellows. When he counts his change the next morning, he is amazed. He has won five twenties, three tens, and 29 silver half dollars.

## *American Success Story*

Inventor Henry Warren's dream of a clock that could be plugged into an ordinary house outlet to operate without winding, regulating, or adjusting—a dream that seemed impossible of fulfillment for many years—is worth recording.

'Way back in 1916, Inventor Warren perfected a tiny electrical motor which he had designed to count the waves of pulsation in alternating current, and to translate these waves into time-signals. The only hitch in this idea was that the signals varied as much as 10 or 15 minutes in one day.

Inventor Warren checked his monitoring motor, over and over again. It worked perfectly, he found. He deduced from his painstaking research that if the electrical power source was actually generating current at 60 cycles, his clock should keep accurate time.

Warren telephoned his local public utility, and suggested that their frequency might be in error. His complaint lead to a recheck of this public utility's station meters; and in due time the power company experts found that Warren was right.

Although most light and power companies had adopted 60 cycles as a nominal value, the inaccuracy of frequency was important at that time.

It looked like a hopeless future for electric clocks, then. Undismayed, Warren proceeded to invent a master clock which measured frequency output for power companies. Then the utility companies, along with the entire electrical industry had to be sold on the value of frequency control—not because such control would advance the sale of electric clocks; but for its commercial value in making possible the careful calculation of production output.

This Warren did.

That's how it happened that the idea of an electric clock powered by an egg-size motor brought not only a new clock industry, but the standardization of electric current frequency itself.

This story is a free-wheeling example of American Free Individual Enterprise in action—free and untrammeled.

## *Farmers Are Flush*

For the dealer-salesman who is willing to hit the rural trail, *and hit it hard,* America's unprecedentedly rapid increase in both rural electrification and farm income is good news.

Ultra-prosperous farmers who now have electrically-wired homes constitute another brand new market for household refrigerators, farm freezers, and many another "big ticket" appliance. (New advances in kerosene-operated household refrigerators also will find a ready market in those rural areas still unelectrified, too.)

One out of every five citizens of the United States lives on a farm. Farm income and savings are at the highest levels in our history. Tremendous market, this is, and the families who comprise it now have the money to buy everything they have coveted for years.

How long has it been since you checked that R. F. D. file of prospects, Mr. Alert Dealer? And have you counted the lush farm market in on your expansion plans, Mr. Manufacturer?

## *Are Prices Too High?*

American wages are the highest in the world, as every schoolboy should know. Notwithstanding our high wage levels, however, American prices—which look pretty high to most of us—compare quite well with those in nations where wages are much, much lower.

A French bureau, the Centre National du Commerce Exterieur, has released a revealing comparison of prices in New York, Paris, Stockholm, Cairo, and Montreal. Official exchange rates were used in converting local currencies to dollars. Here it is:

* * *

| | Paris | Stockholm | Cairo | Montreal | New York |
|---|---|---|---|---|---|
| Bread, lb. | .05 | .13½ | .10½ | .08½ | .16 |
| Milk, qt. | .12 | .10 | .25 | .18 | .22 |
| Eggs, doz. | .93 | .82 | .39 | .50 | .65 |
| Beef, 1st quality, lb. | 1.05 | .42 | .78 | .68 | .73 |
| Sugar cubes, lb. | .14 | .09 | .11 | .12½ | .09 |
| Popular cigarettes, pack | .22 | .50 | .24 | .35 | .17½ |
| Suit, 2-pc. ready-made, good qual. | 44.00 | 58.00 | 41.00 | 56.00 | 51.00 |
| Shirt, good quality poplin | 3.70 | 8.50 | 5.00 | 4.50 | 3.50 |
| Shoes, leather, good quality | 7.00 | 10.30 | 7.50 | 10.00 | 8.00 |
| Stockings, nylon | 1.40 | 2.65 | 3.50 | 1.65 | 1.60 |
| Permanent wave | 3.25 | 5.60 | 8.20 | 15.00 | 9.75 |
| Blanket | 9.30 | 22.40 | 17.20 | 13.00 | 8.00 |
| Sheets | 6.50 | 6.50 | 6.00 | 10.00 | 6.00 |
| Towels, doz. | 9.30 | 8.30 | 18.60 | 18.00 | 12.00 |
| Radio, popular model | 58.00 | 51.00 | 102.00 | 45.00 | 30.00 |
| Iron, electric, good quality | 8.35 | 4.40 | 12.00 | 14.00 | 9.75 |
| Kitchen stove, electric | 116.00 | 111.00 | 185.00 | 180.00 | 150.00 |
| Daily paper | .02½ | .05½ | .04½ | .05 | .05 |
| Picture magazine | .14 | .14 | .12 | .15 | .15 |
| Detective novel | .18½ | .83½ | .41 | .25 | .25 |
| Lunch, in restaurant | 1.15 | .97 | 1.20 | 1.50 | 1.00 |
| Liquor, drink in a bar | .23 | .56 | .33 | .75 | .60 |
| Soft drink, soda fountain | .11½ | .25½ | .21 | .15 | .15 |
| R. R. ticket, 2nd class, 100 miles | 2.42 | 5.25 | 2.64 | 3.24 | 3.24 |
| Gasoline, gal. | .51 | .75 | .53 | .31 | .24 |
| Tire, 6.00 x 16 | 15.30 | 22.80 | 28.00 | 20.00 | 15.00 |
| Apartment, 3-room, rent, month | 6.20 | 70.00 | 62.00 | 90.00 | 60.00 |
| Electricity, domestic rate, kwh. | .075 | .07 | .093 | .019 | .037 |
| Gas, 1,000 cu. ft. | 1.44 | 1.18 | 2.10 | 1.05 | .65 |


# Announcement

Refrigeration Contractors are the logical ones to sell, install and service equipment required to refrigerate George-Ann Warm Room Lockers and Walk-in Boxes.

We invite them to cooperate with our agents (openings for which are still available) who are especially trained in locker financing and operation, meat cutting, processing and merchandising, as well as in grocery store and locker plant layouts.

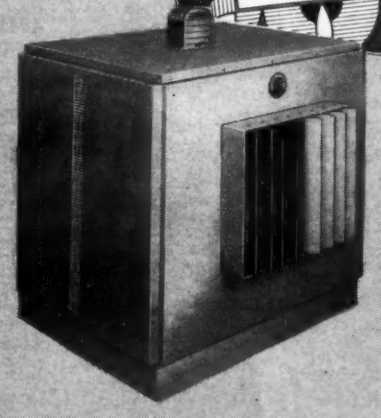
***All inquiries will be promptly handled.***

**WRITE:**

**GEORGE-ANN COMPANY** 321 HIGHLAND DRIVE SEATTLE, WASHINGTON



Great National OFFERS A FRANCHISE WORTH GETTING!

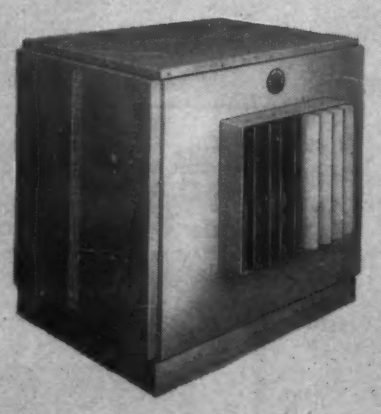


De-Hu-Matic —PATENTED— EXCLUSIVE

Here is a product of today's new thinking. De-Hu-Matic brings a new era in Evaporative Cooling. *Why?* Because it works anywhere in the country—even brings cooling improvement to the hot, dry areas. *How?* Because it gives five-zoned cooling, automatically adjusting to *both* wet and dry bulb needs. It's patented, of course, and it's yours *exclusively.*

Evaporative Kooler-aire WITH GYRO-SPRAY

Self cleaning Gyro-Spray, standard equipment with Evaporative Kooler-aire makes this unit a *standout seller.* Its swirling water action continuously washes down the mats, thus letting more, cleaner and sweeter air through for a superlative cooling job. The reasonable price for results it gives is the talk of the industry. It's a sweet machine to sell.



Kold-aire —MOST FOR THE LEAST

You can bet your bottom dollar that no one will offer as much comfort cooling for as little money as this new mass-produced Kold-aire unit. And no sturdiness, no quality, has been left out. Kold-aire brings a lot of comfort cooling value for a very little price.

## Rubin Raskin Appointed Head of Franklin Body's New Refrigeration Div.

BROOKLYN—Barnett Parker, vice president of Franklin Body & Equipment Corp. here, manufacturer of refrigerated auto bodies and evaporator plates, has announced the addition of a refrigeration division for the manufacture and sale of evaporator cold plates to refrigeration parts wholesalers and manufacturers of refrigerating equipment.

**Rubin Raskin**

The new division will be under the direction of Rubin Raskin, general manager, formerly chief engineer of Stangard-Dickerson Corp. and until recently national plate sales manager of the refrigeration division of Noma Electric Corp.

Parker also announced the appointment of J. B. Rodgers as sales manager. Rodgers was formerly assistant sales manager of Stangard-Dickerson Corp.

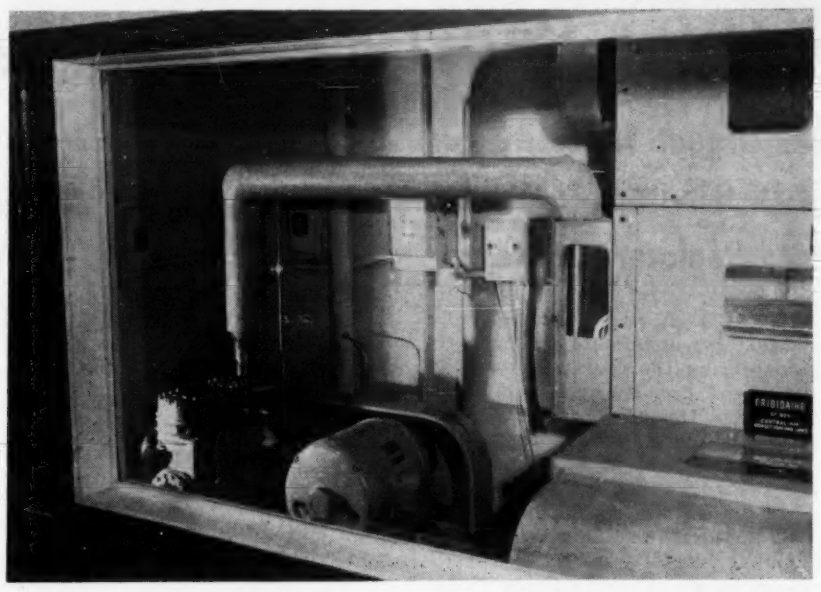
Raskin has been active in refrigeration since 1935, including three years spent in the Army Air Corps.

### Worthington Names Firm In Ga.

MACON, Ga.—Kinnett-Odom Co. here has recently been named distributor for Worthington Pump and Machinery Corp.

**This air conditioned Frigidaire exhibit at the Chicago Furniture Mart is said to include the requisites of an ultra-modern retail showroom. Included are a showroom, lounge, office, and cloakroom.**

* * *



**Frigidaire central system air conditioner is installed on floor below.**

## Frigidaire's Air Conditioned Chicago Mart Display Is Live Example Of Possible Design for a Modern Retail Appliance Showroom

CHICAGO — The important role that air conditioning plays in the retail store modernization picture and its bearing on present-day retail merchandising strategy is exemplified in a permanent exhibit, designed by Frigidaire division of General Motors, at the American Furniture Mart here.

Significantly enough, the Frigidaire exhibit area closely resembles a carefully-planned and well-integrated retail store showroom of the most modern design. As a matter of fact, the entire setting could be transposed to a "main street" location in any progressive American city and start doing business immediately.

Completely air conditioned by Frigidaire central system equipment, with a 5-ton store conditioner as a secondary unit, the exhibit contains a good-sized showroom, lounge, office, and cloakroom. Like any up-to-the-minute retail store, the showroom has been planned to include gleaming white porcelain and chrome kitchen settings; home laundry equipment in typical utility room arrangement; and smartly-styled product displays of "selling station" design; which embrace a host of modern appliances and refrigeration equipment. This showroom holds far more than meets the eye because, aside from its attractive styling, the over-all arrangement pattern is conducive to the sales psychology of "demonstrating to sell."

The over-all decorative theme follows current styling trends, striking a design note of harmonious simplicity. Ceiling lights accentuate the pastel color scheme of citron yellow, cool greys, and bleached oak. The product arrangement pattern follows straight lines and sweeping curves. Cleverly illuminated tri-dimensional color photographs fit into the showroom decor. Three sides of the exhibit are of glass. Sectional divans have been strategically located, facing product displays for the convenience of customers during demonstration periods.

The exhibit area is about 50 ft. square and contains approximately 2,500 sq. ft. of floor area or about 30,000 cu. ft. of air conditioned space. Generally speaking, the air conditioning load compares favorably with that of an average sized retail store or an appliance section in a large establishment such as a department store.

The modern lighting system includes fixtures totalling about 7,600 watts. Then too, because product demonstrations are employed continually during the normal course of a selling day, heat from various operating appliances creates an additional load factor. Therefore, the B.t.u.'s generated by automatic washer, dryer, water heater, refrigerator, and water cooler are a part of the over-all air conditioning load. In addition, the heat transmission through the walls, floors, and ceiling must be considered, together with the broad expanse of glass windows. Ventilation includes three complete changes of outside air each hour.

Simulating conditions in the average retail store where floor space is customarily at a premium Frigidaire engineers installed the air conditioning equipment on the floor below the actual exhibit in a position comparable to a "basement" location. A relatively small area is given over to the actual air conditioning equipment. The entire mechanism, including the conditioner and condensing unit, is housed in an enclosure only 12½ ft. long, 6½ ft. wide, and about 12 ft. high. A window has been provided so that visitors can inspect the equipment while it is in operation.

The central system air conditioner is the vertical type with a nominal refrigerating capacity of nine tons. Air is cooled, dehumidified, filtered, and circulated at the rate of 3,200 cu. ft. per minute. Hooked up with the conditioner is a 10-hp. water-cooled reciprocating condensing unit.

A single duct leading up from the equipment delivers conditioned air to a series of distribution ducts, which serve 13 ceiling outlets. Eleven of these outlets condition the showroom while the remaining two are located in the office and lounge. Another duct returns 1,825 cu. ft. of inside air from the exhibit area to the conditioner each minute. This flow is mixed with 1,375 cu. ft. of fresh air per minute, which is drawn from outside the building. In addition, a 5-ton store air conditioner supplements the central system in the showroom.

This modern, air conditioned exhibit clearly defines the numerous advantages of an air conditioned retail establishment for Mart visitors. With a little foresight, the average visiting retailer can dispel thoughts of wintry blasts from his mind and picture the collar-wilting characteristics of a "summer-scorcher." In his mind's eye, he knows that air conditioning is a business-builder which attracts new customers, holds his old customers, and causes both groups to shop more leisurely. This means more for on-the-spot selling, demonstrations, and all the other important aspects that go with closing the sale. Air conditioning enhances an otherwise poor business location.

### Hussmann Refrigerator Co. Pays 25-Cent Dividend on Common

ST. LOUIS—A regular quarterly dividend of 25 cents on common stock payable on Feb. 1 to stockholders of record Jan. 21 has been announced by the Hussmann Refrigerator Co. here.


AT LAST! . . . SOME

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ABOUT

*Evaporative Cooling!*

WELL, first we decided it's about time someone did some new thinking on dealers' problems. You want a profit . . . you want a franchise that tells you "Here is something you can tie to and build upon this year, next year, and on and on." You want good equipment that stays sold for keeps. You want to represent a manufacturer who has a heart as well as a profit mind.

And so these are the things our New Franchise brings to every Great National dealer who obtains it for his area:

1. *Three well-engineered machines* at three price levels . . . a complete line that means you have comfort cooling to sell for every size pocket book.
2. *As an exclusive sales leader* we give you the brand new DE-HU-MATIC that's revolutionary in control and results, that is tops in quality. No one can sell DE-HU-MATIC but those who have the New Great National Franchise. This means extra profit for you and the prestige that comes with being the exclusive dealer for this fine product.
3. *A Franchise that means we want you* now as our representative in your area. A Franchise that means we want you to like the new 3 Star line so well you'll get a THRILL as well as a PROFIT out of every sale.

Finally we offer you a Franchise that we hope and believe will lead you to feel—here is a manufacturer you like to do business with; here is a company that feels the dealer and the manufacturer should be partners.

It is these things, these features of our new dealer Franchise that make for permanent relations over the years with dealer business men who like to sell good products at a good profit. They like to feel that with every sale they build themselves a sound business that is theirs to hold and keep over the years.

It's a great Franchise—and it's exclusive, of course.

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(A SUBSIDIARY OF USAIRCO)

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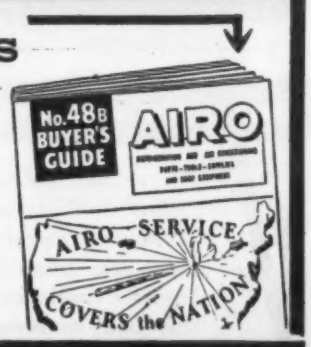


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# NARDA Panel Cites Need for Price Protection, Selective Franchising

## Sees Urgent Necessity for All Distributors To Stock More Replacement Items

CHICAGO—A panel discussion on manufacturer-distributor-dealer relations during the recent first annual meeting of the National Appliance and Radio Dealers Association revealed these complaints—among others—of individual retailers:

1. "Unwillingness" of distributors to carry adequate replacement items on automatic washers, refrigerators, and home freezers.
2. Franchising of dealers "irrespective of the background, capital, or location."
3. Lack of price protection by some manufacturers.
4. Announcement of new models by years.
5. Current "low" markups and elimination of the 20% cash discount.
6. Sales by some distributors to owners of real estate property.

The panel was comprised of F. O. Broyles, Broyles Electric Co., Marion, Ind., chairman;; Frank J. Leone, F. J. Leone Co., Lawrence, Mass.; J. Kyle Holley, General Appliance Store, Chattanooga, Tenn.; and Bob Hill, Bob Hill & Associates, New York City.

### CUSTOMER GOODWILL LOST

"A lot of customer goodwill, that was costly to acquire, has been lost by delays we have been unable to avoid, because distributors were not carrying sufficient replacement parts," Broyles asserted. "A concerted effort by our entire membership to cause our suppliers to make preparation to improve this situation should be one of our aims. . . .

"More than 60% of our purchases in the past year have been with one supplier who has done better than an average job in taking care of our needs for replacement parts, etc., but some of the smaller distributors seem to have only the sale of an appliance as their responsibility."

Broyles said that "outside of ranges, refrigerators, and washers, almost all of your purchases are in less than carloads. With freight costs getting to be such an item, we should expect the distributor to make arrangements for the manufacturer to ship mixed cars in every instance where dealers can arrange to handle them."

The "big headache" of the business, according to Leone, it that "many suppliers are not interested in what happens to their product after it leaves their warehouse but are only hungry for volume."

"Because of this," he declared, "radios and appliances are being sold by dealers who do not add prestige to our business but degrade it. There are too many places such as shoe repair shops, gasoline stations, and many other places which should not hold a franchise.

"Dealers of this type cannot do enough volume unless they cut prices, nor render efficient service, therefore, the reputation of the product is affected. Most suppliers are too free to appoint dealers, irrespective of their background, capital, or their location. . . .

"The less dealers there are, the more consideration could be given the fewer selective dealers, thus making the dealer a better one. The dealer would handle fewer lines, having a quicker turnover, and could sell more effectively with more cooperation from the supplier's salesmen. . . .

### MUST HAVE COOPERATION

"Up to now, the dealer has had it easy going, but from now on he has to operate more efficiently, and above all must have a better knowledge of the products that he sells. He also must have more cooperation from the supplier, such as periodic sales schools, service schools, and last but not least, a price tag or label which includes sales features, specifications, and operating instructions.

"Price protection and model changes should also be considered very seriously.

"Each franchise should have a price protection for one year or not less than six months. If some manufacturers can do it, there is no reason why they can't all do it.

"New models should not be announced by the so-called yearly model. They should be added as the manufacturer finds it necessary, and not make a big hullabaloo about "come and see the new 1949 models."

"How many times have we been sold a large lot of radios and then found a few days later that a new model was announced. Here, too, some manufacturers follow this policy and if one can successfully do it, others can.

### 'SCRUTINIZE APPLICANTS'

"Each new applicant for a franchise should be scrutinized very carefully. No serviceman, broker, or any other retailer desiring to enter the appliance business should be considered unless he can prove that he has adequate floor display space.

"These dealers are using the established dealer's display room, the salesmen's time, and then selling what the prospect selects at wholesale. Our business is a big business and should not be considered as a 'side line.'

"Fair trade, if possible, on all radios and appliances would be the elimination of cut prices. If it is not possible to have fair trade on everything, everywhere, the franchise should be written to the effect that if a dealer is caught cutting prices, he would be disfranchised, and if the manufacturer really means it, there would be fewer dealers practicing this very bad policy. . . .

"Our business is a respectable one; why allow it to go to the dogs. Let us get after those suppliers who are allowing our business and their business to go to ruin.

"No dealer should be allowed to sell appliances on long terms and not charge interest. It is just as unfair as cutting the price 6%. . . .

"It is unnecessary to state that the prewar nominal discount of 40% must be reinstated if we are to maintain a sales force, to advertise, and to promote appliances effectively. Every worthwhile dealer should be able to maintain a home economist in his employ, but you can't do it with the present low markup we are receiving.

### DISCOUNTS CUT

"There is no other business where the retailer is not getting the same markup that he received before the war. Why should we be singled out? Any dealer who is offered less than 30% discount should refuse to buy, unless he is a wizard and can operate under 26% overhead.

"Another discrimination against the appliance dealer is the elimination of the 20% cash discount. There is no other retail business that this happened to since the war, but we have taken all this because we haven't been organized.

And, last of all, no dealer in his right mind should continue to buy from a supplier who sells through the back door."

Although reporting that there is no problem of back door selling by "top line" distributors in his area, Holley noted that several distributors of some of the less well-known brands have "apartment house specialists" or contractors' representatives who sell to real estate owners.

He also posed the question: If dealer franchises require manufacturers' prices to be maintained, why don't distributors adhere to this policy?

### PEOPLE ARE DEALER'S PROBLEMS

Hill told the dealers that "your problem is not one of merchandise, location, or discounts. It is in people—people who supply you with merchandise or ideas, people who sell your merchandise and ideas, and people, your customers, who buy from you.

"The average appliance and radio dealer operates his business today no differently than he did five years ago. In fact, those of you who were in business 20 or 25 years ago did a better selling job then than you are doing today.

"During the past few years, easy money has been taken out of the industry because we have been selling on merchandise allocation. Now while hard times are not here yet, the easy times of doing business are going fast. Sales curves are flattening out and production curves are going up.

"One manufacturer reported that from his recent survey, production of refrigerators would total 7,000,000 a year. The purchasing power or demand for these refrigerators was only 3,500,000. Now what are you going to do to meet this situation?

"The manufacturer must produce them because his 'break-even-point' is high, and a reduction of his volume would cause losses which could ultimately put him out of business—and which would affect you drastically.

### WARNS OF APPLIANCE PRICE-CUTTING WAR

"All the known tools in distribution will be employed by the manufacturer and distributor. They will train their salesmen, they will advertise and promote their sales. Many retailers will be loaded down with merchandise, and unless he in turn does a merchandising job, you will see the damndest cut price war that has ever happened.

"You dealers handling radio know what I mean. It can happen to refrigerators and other major or traffic appliance selling.

Now let's take the dealer who is doing business today and ask him a question. What did he do in 1948 that was different to what he did in 1947, or, for that matter, what he did in 1941? Maybe he will say that he has a better business location, or better lighting, or better fixtures in his store. He may give faster service on repairs.

"Analyzing that, you will find that he is not doing anything different than anyone else. It boils down then to what you can do as a dealer that other retailers can't or won't do. . . .

"What is it that dealers don't do because they either lack know-how, will not spend time and money, or have been unsuccessful with a half thought-out plan? It is a matter of handling people—building a sales organization. Manufacturers and distributors tell me, and trade papers point out, that there are only a few dealers that have a sales force today.

"Your association tried out an idea in Toledo. They ran an advertisement offering sales jobs. Was the experiment a success? No! Why? Again the answer is in people.

"Was the prospective salesman offered a dignified job, training, promotion, and advertising to back him up? Was he offered security in income, plus an incentive to greater sales effort? The answer is "no." Therefore, fundamentally, you must approach this building of a sales organization problem from the angle of people.

"You can't hire on a straight commission basis. Those chaps who you think you have hired on that basis are usually the dregs on the market. They are no good for you, nor is the the job good for them. . . .

"There are differences and distinctions in selling. A seller to your customer must know the product, how it should be used, the need of the user, the market, competition, the firm he represents, and the person to whom he is selling.

"He is a specialist. He must have specialized knowledge. He must be enthusiastic and have a burning zeal for his product. . . .

"The life blood of every company is to be found in its policies as they relate to the human element. Yet, many companies who annually spend thousands of dollars on merchandise, rent, etc., spend little or nothing on checking its human element policy in relation to the job expectancy.

"The importance of the job to be done in the industry was the primary factor in my decision to resign as director of the Appliance Div. of the National Electrical Wholesalers Association."

When the discussion was opened for comments from the floor, Louis Norton, Norton Hardware, Toledo, challenged Hill's statement that the Toledo salesman recruiting plan was a failure. He said that even though only five prospective salesmen out of 65 recruits "stuck," the plan was "a great success and a great time-saver for the dealers."

"It was a start in the right direction," he declared, "and we will try it again, although perhaps a little differently."

Hill acknowledged that the selective tests used by the Toledo dealers are "80% accurate in the judgement of men."

One dealer predicted that the practice of some manufacturers and distributors of "jumping" dealers and selling to builders "will be our biggest problem." Stating that he sees 55% of the new-house market disappearing," he said this practice "can ruin many dealers and cut the profits of others."

Another dealer observed that he doesn't believe manufacturers will ever stop giving discounts on large unit sales. "Let's ask what is reasonable," he suggested. "Petty" sales skipping the dealer, not large unit sales, are what bothers him, another added.

After one dealer reported that at one time during the postwar shortage of merchandise, a semi-contractor in his city had a stock of refrigerators while he had none, Clif Simpson, NARDA managing director, commented that "manufacturers must more rigidly control the trade ways their appliances travel."

An eastern dealer recommended that a NARDA committee be appointed to discuss the panel subject with producers.

## Dealer Asks Reinstatement Of Prewar 40% Discount And 20% for Cash Payment

## Outlook for 1949 Market and What Can Be Done About It

CHICAGO—What kind of a market can appliance dealers expect in 1949 and what should they do about it?

Some answers to these questions were given by executives of Norge, Westinghouse, and Commercial Credit Corp. during the recent first annual meeting of the National Appliance & Radio Dealers Association. Pertinent extracts from their talks follow.

**H. L. Clary, director of sales, Norge:**

"Let's take a look at some basic statistics over a 10-year period—adjusted to 11 years, since 1937 was the outstanding year of the thirties.

"We think that the formula which indicates the opportunity for volume sales can be reduced to the somewhat simpler terms: people plus pay envelopes plus electric meters plus sales efforts equal sales.

| | 1937 | 1948 | Growth |
|---|---|---|---|
| **People** | | | |
| Population | 128,824,829 | 144,000,000 | 12% |
| Employment | 41.5 million | 61.5 million | 48% |
| **Pay Envelope** | | | |
| Disposable income | $71 billion | $175 billion | 246% |
| Hourly earnings | 69¢ | $1.29 | 87% |
| **Electric Meters** | | | |
| Wired homes | 22 million | 34 million | 54% |
| Housing construction | 336,000 | 1,000,000 | 197% |
| **Sales Effort** | | | |
| Electrical appliance sales | $730 million | $3 billion | 310% |

(Replacement market only, today—one billion dollars.)

"From these facts you can see that today we have 20 million more wage earners, earning two and a half times as many dollars after taxes, living in 54% more wired homes, and they all want freezers, automatic washers, refrigerators, and other appliances.

"As a matter of fact, today, three and a half years after the close of the war, only one home in every three has purchased a postwar refrigerator, electric range, or washer—think of that! . . ."

**T. J. Newcomb, sales manager, Westinghouse Electric Appliance Div.:**

"Too many of us have applied the same unbalanced diet approach to our electrical appliance business that we have to eating.

"We have taken the items that were easy to get, easy to sell, and best tickled the palates of our cash registers, irrespective of whether or not they constituted a balanced diet for sustained good business health. . . .

"We may find that our negligence in broadening our appliance diet in the development of hard-to-sell items, and new items with high future potential, has afflicted us with some serious commercial ills.

"Many of your present salesmen, if you have any, probably have only been in this appliance business since the war and they are pretty much in the category of bloated plutocrats.

"They have never felt the intense heat of competitive selling and when it hits them, they will either get discouraged and quit or collapse from pure fright. Darned few of them probably ever heard about such a thing as 'cold canvass' and 'door bell punching,' and would be highly insulted if it was even suggested.

"In some way, we have just got to rebuild the good old-fashioned, hard-hitting sales organizations back into this business. The days of pep-up breakfast meetings, sales contests, and promotional stunts of all kinds must be revived to fire them with fight and teach them that having a door slammed in their face is a thrilling social gesture rather than an insult."

**Paul M. Millians, vice president, Commercial Credit Corp.:**

"Strive to avoid the financial sandtraps in your businesses. In many cases, break-even points have been raised too far by high fixed expenses.

"Dealers should put their profit plans down on paper and compare the break-even point today with the same figures in a normal, prewar competitive market, making allowances in current figures for a 30% drop in volume. Then, see if the break-even point is still visible."

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## Paltridge Named Special Sales Rep. In N. Y. City For Baker Ice Equipment

SOUTH WINDHAM, Me. — The Baker Ice Machine Co., Inc. has announced the appointment of H. H. Paltridge as special sales representative in New York City. He will be located at the company's offices at 103 Park Ave.

H. H. Paltridge

Paltridge has been engaged in air conditioning and refrigeration work since 1932 with the exception of the war years when he served with the U. S. Naval Civil Engineers Corps. Upon release from active duty, he became chief engineer and later general manager of the Goodsell Corp.

He is well-known in air conditioning and refrigeration circles as the designer of several types of refrigeration equipment and as a pioneer in the development of many advanced applications of refrigeration engineering.

His most important contributions to refrigerating techniques include: Tunnel freezing methods for frozen foods processing; hot gas defrost systems and the use of cold diffusers in food freezing plants and in the hardening of ice cream; and various refrigerating devices now used extensively for storage and merchandising of frozen foods.

As representative for Baker's line of both "Freon" and ammonia equipment, Paltridge will operate throughout the New York metropolitan area and will specialize on consultation, planning, and engineering work for all phases of industrial and commercial air conditioning and refrigeration.

## Kansas Theater To Have $125,000 Cooling System

KANSAS CITY, Mo.—A new air conditioning system to cost about $125,000 is part of the remodeling plans that will make the Mainstreet theater here, closed since 1941, "one of Kansas City's luxury theaters," according to Malcolm Kingsberg.

Kingsberg is president of R. K. O. Theaters, Inc., which recently acquired the Mainstreet from Fox-Midland Theaters.

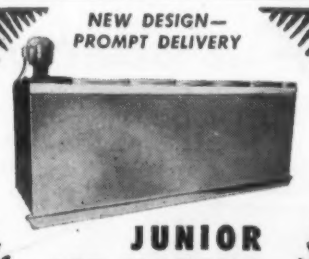
He added that the Mainstreet, which has a seating capacity of 3,049, will be remodeled from top to bottom to the tune of $400,000 to $500,000. It is expected to be reopened about Sept. 1.

## New Commercial, Household Outlet Named by Frigidaire

SPOKANE, Wash. — The Sunset Electric Co. here has been appointed distributor of household and commercial Frigidaire products to all dealers in northeastern Oregon, eastern Washington, Idaho, and western Montana, R. M. Spiger, general manager, has announced.

The firm has branches in Tacoma, Seattle, and Portland, Ore. It intends, according to Spiger, to build a warehouse with more than 30,000 sq. ft. of floor space this year. It will consolidate all its operations here in the new building, he further indicated.


NEW DESIGN—
PROMPT DELIVERY



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*Heat Spoils Complexion of Hollywood Film 'Star'*

# 'Spot Cooling' Device Halts Food Wilting Under Movie Floodlights

HOLLYWOOD, Calif. — A "spot-cooling" device, constructed on the spur of the moment by commercial refrigeration engineers at Frigidaire's Los Angeles branch, was used here recently in the filming of a color movie on foods for the United Fruit Co.

The device, which consisted of a ½-hp. Frigidaire Meter-Miser compressor and a forced air cooling coil kept the food from wilting and discoloring from heat created by floodlights during the shooting of the picture.

The wilting and discoloring problem developed during the "set-up" period when technicians were preparing food displays for shooting.

A solution was found through a suggestion by Miss Verna Miller, Frigidaire home economics department director, technical advisor on the use of a Frigidaire electric range and refrigerator, which were used in the picture.

An urgent call was put through to the Los Angeles branch of Frigidaire for portable refrigeration equipment, which could be used to "spot" cool specific areas during production of the picture.

Branch commercial department engineers improvised and built two portable cooling devices. Each was comprised of a ½-hp. Meter-Miser compressor hooked up with a Frigidaire forced air cooling coil.

Because it was a rush job two special racks, about 5 ft. high, were constructed from packing cases. The compressors were mounted on the bottom of the racks while ceiling-type forced air units were installed above.

Each rack was mounted on a dolly so that it could be moved easily. A long snout-like cardboard baffle was taped into place on each forced air unit so that the cool air could be directed downward over the food at table level.

Rushed to the studio, these special coolers were placed at either end of a table where close-ups of the food were to be shot. With the two forced air units circulating 350 cu. ft. of air per minute over the displays, cameramen were able to follow through with their filming without difficulty.

Quality of the food remained high, despite the heat from the huge lamps. What's more, technicians working with the displays under the lights admitted that benefits were not confined to the food alone.

### Dairy Assn. To Hear Byrne

WASHINGTON, D. C.—The current outlook for business volume and competition will be discussed by John M. Byrne, of the Byrne Organization, Cincinnati, at the 30th annual meeting of Dairy Industries Supply Association on Feb. 16 at the Hotel Statler in New York City.

## Kisco Co. Fire Delays New Model Shipment

ST. LOUIS—Delays in the shipment of new model Kisco Circulairs are expected due to a fire that nearly destroyed the Kisco Co., Inc. plant at 39th and Chouteau Sts. here on Christmas Day, J. W. Kisling, president, has announced.

He stated that production of the Circulairs will be resumed on Feb. 15 in the firm's new plant at Barton and DeKalb Sts., but full production is not anticipated before March 15.

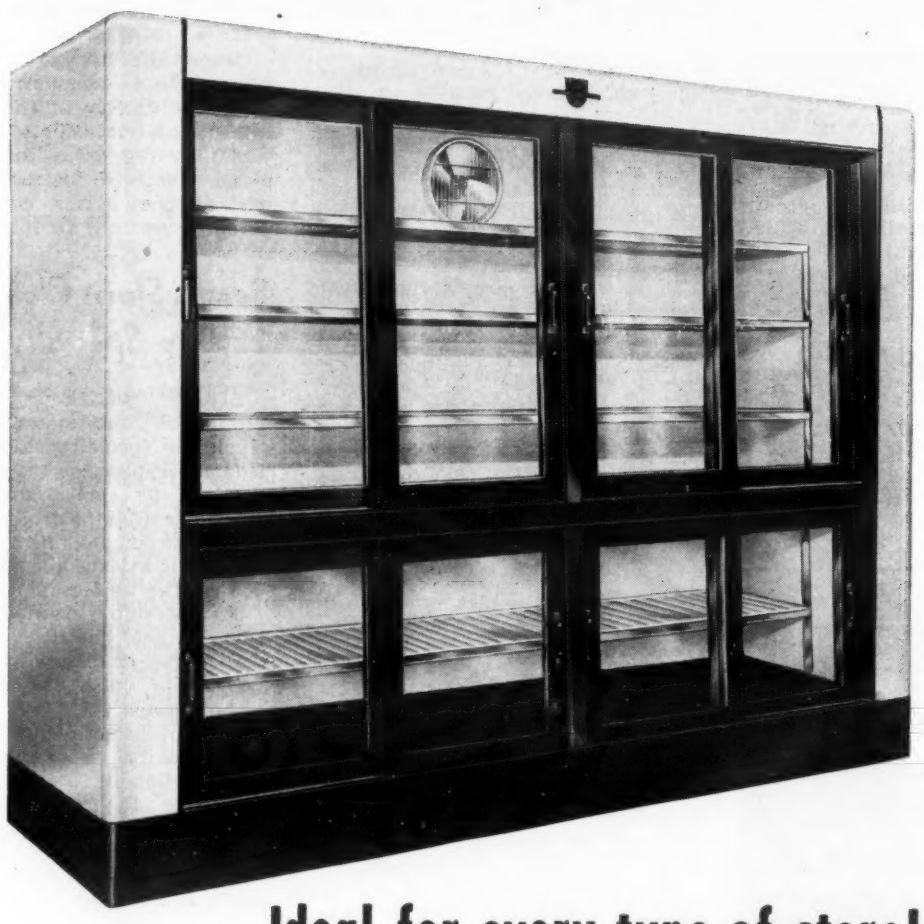
The new plant, he said, has almost three times the capacity of the old building.

He asserted that orders for standard model Circulairs are being filled from stocks in other warehouses.

### Supermarket Gets Display Cases

BUFFALO — Refrigerated meat, produce, frozen food, fish, ice cream, and dairy departments are features of the newly opened Loblaw supermarket at 2160 Genesee St. here.


# STORES EVERYWHERE WELCOME NEW KOCH DAIRY CASE!



**Ideal for every type of store!**

**IT BUILDS SALES!**...This new KOCH Model 3508, 8-ft. Dairy Case, not only provides the usual high-quality type of refrigeration for which KOCH has been noted since 1883, but it actually sells dairy products! The magnetic display and the wide, spacious shelves urge customers to help themselves to the merchandise that is on display. Doors slide easily aside, encouraging customers to make their own selections.

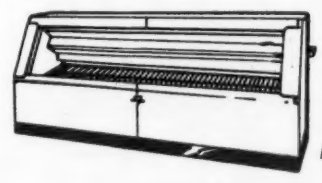
**IT HAS BIG CAPACITY!**...In proportion to floor space, Model 3508 has huge storage capacity. Both compartments are refrigerated, with four large sliding doors opening into each big display section. Front is white porcelain. Exterior ends and interior walls are of high-baked white duPont Dulux. Sliding doors are black.

**See this big, beautiful new Dairy Case...you'll see why stores everywhere demand it.**

KOCH Refrigerators
SINCE 1883 • NORTH KANSAS CITY 16, MO.

"The Line of Least Resistance"
the QUALITY Line—KOCH!

MODEL 306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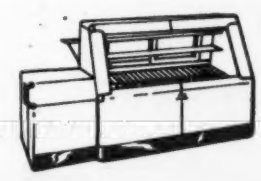
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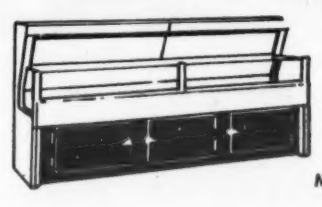
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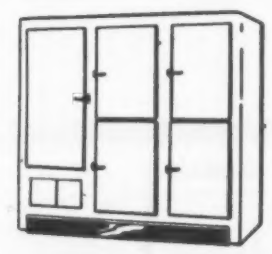
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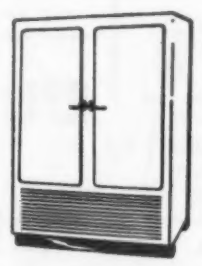
MODEL 4825

*Send Today for Details and Open Territories*

KOCH Refrigerators, Dept. RN
North Kansas City 16, Mo.

Gentlemen: Please send full information regarding KOCH Refrigerators.

Name_____

Address_____

City_____ Zone____ State_____

## Dept. Store Sales for Last '48 Week Hold '47 Level

WASHINGTON, D. C. — Department store sales across the nation during the week ending Jan. 1, 1949, averaged the same as for the corresponding post-Christmas week in 1947, the Federal Reserve Board reported recently.

However, actual changes in percentages in the several districts showed wide variations, the board noted. The Atlanta district was the only one reporting no change over last year.

The Kansas City district led the country in percentage gain—up 13%. New York followed with 8%.

The Richmond district reported the greatest loss—down 10%—followed by San Francisco which was off 7%.

Other district percentage changes: Boston 3%, Chicago 3%, Cleveland -1%, St. Louis -3%, Dallas -3%, and Philadelphia -6%.

# Snubbing Small Repair Jobs Costs Dealer Christmas Dollars

LAS VEGAS, Nev.—How a policy of discouraging small repairs cost one dealer here many dollars in new appliance sales last Christmas rated editorial mention in the Las Vegas *Review Journal* recently.

An editorial occupying more than a column of space told the story of the wife of a businessman who said she was not going to buy several electrical appliances at this nearby electric shop but intended to do her Christmas shopping at one that was located much more inconveniently for her.

The editorial said, in part:

"The lady had a complaint. . . . She was particularly perturbed about the attitude of the electrical dealer in her neighborhood, who consistently turned up his nose when she sought a minor repair job on a piece of equipment.

"First instance concerned the socket of a floor lamp. Globes kept burning out and at a dollar a throw, it was quite an item. . . . She naturally carried it to the nearest shop for inspection. She was advised they didn't have time to bother with such 'small jobs' and they sent her on her way.

"Next time it was an electric heating unit that failed. She took that over for repairs. She was told it was 'no good anyway' and not 'worth repairing.' She was then shown some 'new modern' heaters with the admonition she should buy one and forget the old unit. The cost was well up toward $100 and she didn't have the money.

"The man explained again that the repair job didn't interest them, but this time the lack of interest was based on the condition of the old heater. She took it to a downtown shop where it was put in operating order again for 'less than ten dollars.' The dire predictions that it wasn't worth fixing failed to materialize. It is now serving quite satisfactorily she assured me.

"Her third and last foray into the place found her carrying an electric iron which had developed thermostat trouble. She had purchased the item there and felt certain this should entitle her to service.

"The man told her they probably couldn't find out what the trouble was in their own place and would have to send it to the factory anyway so why didn't she save them the trouble and send it herself.

". . . She wanted me to understand that the experience was NOT an indictment of all electric shops—just one—and that she DID find an old established concern that was ready and willing to take care of her trouble."

The editorial went ahead to intimate, however, that such experience was not uncommon at other shops in the city.

## IEEDA Backs State Bill To Assure Safe Appliances

SPOKANE, Wash. — The Inland Empire Electrical Association is sponsoring an electrical merchandise safety bill that will be introduced into the current Washington state legislature, Robert Wilkinson, executive secretary of the association, has announced.

The bill will, according to Wilkinson:

1. Prevent the sale of cheap, shoddy, unsafe electrical devices.

2. Eliminate the appliance gray market.

3. Prohibit sale of electrical goods to retail customers by anyone except registered electrical retailers and contractors.

The bill itself provides that all electrical products, including appliances, shall conform to standards set up by the National Bureau of Standards, the Underwriters' Laboratories, Inc., or the state director of labor and industries.

It further provides that no appliance can be sold at retail from which the manufacturers serial number has been removed, replaced, altered, defaced, or obliterated.

It would also require the registration of every person selling appliances at retail with the state director of labor and industries. A fee of $2 would be collected at the time of registration.

Civil remedies and as yet unspecified criminal penalties against violators are also provided for in the bill.

## *Spark Sales In West, East*

R. K. White C. W. Kirby

* * *

## C. Kirby, R. White, Head Crosley Field Operations

CINCINNATI — Appointment of Corley W. Kirby as eastern sales manager and R. K. White as western sales manager to head up a new Crosley field sales organization was announced this week by W. A. Blees, vice president of Avco Mfg. Corp. and general sales manager of the Crosley division.

White, a newcomer in the Crosley organization, was formerly with Frigidaire and Delco and was on the executive staff of Campbell-Ewald Co.

He was also advertising and sales promotion manager of Chevrolet and assistant general sales manager of Pontiac. During the war he was an executive with the War Production Board and Ordnance Dept. of the U. S. Army.

White will supervise the activities of new regional sales offices to be set up in Chicago, Dallas, and San Francisco.

Kirby, who came to Crosley in August, 1947, as domestic sales manager, is a veteran of the major appliance and radio fields, having served in various capacities, both in headquarters and in the field, with Frigidaire. Kirby will supervise the activities of sales offices in New York, Cincinnati, and Atlanta.

Both White and Kirby make their headquarters at the Crosley general offices in Cincinnati.

The New York region, which will be headed by Ralph Nordquest, will be serviced by five regional representatives covering the cities of Boston, Buffalo, New York, Philadelphia, and Baltimore.

The Atlanta region will be under the supervision of F. D. O'Sullivan and he will have representatives in Charlotte and Jacksonville, in addition to Atlanta.

The Cincinnati region will be headed by Tom Mason with regional representatives in Detroit, Cleveland, Cincinnati, and Indianapolis.

Hal Linebaugh will head the Chicago region and will have representatives in Peoria, St. Louis, Omaha, St. Paul, Kansas City, Mo., and Chicago.

V. R. Lindemann will be in charge of the Dallas region with representation in Memphis, Houston, and Dallas.

N. B. Dinkel, who will head the San Francisco region, will have representatives in Los Angeles, Seattle, and San Francisco.

In addition to the sales personnel in each regional office, a regional service manager and an electronic specialist will report to the regional managers. All offices will be opened prior to Feb. 1.

Claude Stevens, a veteran of the Crosley sales organization, has been appointed manager of distribution. Stevens, who has had wide experience in the field, will supervise distributor orders, reports, and forecasts, Blees said.

## Service, Education Weak In Washer, Ironer Fields

CHICAGO—Servicing is the weak point in consumer relations in the washer field, and failure to provide complete education to users has hurt the ironer field, it was brought out at the second national home laundering conference, sponsored by the American Washer & Ironer Manufacturers Association, which was attended by representatives of women's magazines, consumer groups, and the manufacturers.

Manufacturers were told that no matter how fine a product they produced, careless servicing would result in poor public relations for the manufacturer. One suggestion made to improve installation and service was to have the plumbing connections made an integral part of the washer.

Concerning ironers, it was recommended that demonstrations should include a variety of the items to be ironed, not just shirts alone, and it was also suggested that women be given complete instructions on the use of the ironer controls before actually starting to iron.

## *Bendix Starts Club To Honor 25,000 Specialty Salesmen*

SOUTH BEND, Ind.—For recognition of outstanding retail and wholesale specialty salesmen, Bendix Home Appliances, Inc., has announced its sponsorship of Men of the Year Club. Enrollments are expected to include some 25,000 Bendix retail salespeople and more than 300 at the wholesale level.

Membership, granted on application, brings enrollees a scroll and wallet-size membership certificate, a booklet of rules and selling advice, and opportunity to win in succession lapel buttons attesting to the person's sales ability. Six awards may be won by Bendix salespeople:

Bronze, for sales counting 2,000 points; silver, 4,000; gold 8,000; gold with one ruby, 14,000; gold with two rubies, 25,000; gold with two rubies and one diamond, 60,000.

## *Carolina Dealers Sell 1,327 Refrigerators In November*

RALEIGH, N. C. — Unit sales of major appliances made during November by the largely rural dealers in the territory served by the Carolina Power & Light Co. were reported by the utility as follows:

| Appliance | Units |
|---|---|
| Ranges | 1,094 |
| Refrigerators | 1,327 |
| Freezers | 182 |
| Water Heaters | 724 |
| Dishwashers | 44 |
| Automatic Washers | 258 |
| Conventional Washers | 1,718 |
| Dryers | 18 |
| Ironers | 34 |
| Water Systems | 252 |

## Nutter Named To Purchasing Post In G-E Appliance Dept.

BRIDGEPORT, Conn.—Lee D. Nutter has been appointed manager of purchasing for the General Electric appliance and merchandising department, it has been announced by J. W. McNairy, manager of engineering and manufacturing. He succeeds E. E. Dunning, who has retired.

Nutter, who was formerly assistant manager of purchasing, entered the company's business training course in Bridgeport in 1937. Three years later he transferred to the sales training course, and in 1941 he joined the order and stores section.

He was later in the purchasing section of the company's home laundry equipment division and then in charge of purchasing at the York, Pa., Works. From there he moved to Philadelphia as Atlantic district representative for the household refrigerator division.

## Appliance Store Holds Opening

JACKSON, Miss.—General Refrigeration & Appliance Co., Inc., at State and Amite St., here held its grand opening Dec. 9, 1948.

The company had an account of the grand opening aired over radio station WRBC, and awarded 50 prizes worth $2,800 during the day.


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The new 1949 BEN-HUR FARM and HOME FREEZERS

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THREE Popular Models

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A catalog issued to and for the trade only . . . Write—NOW—on your letterhead, for your copy of the most nearly complete refrigeration-parts-and-supplies catalog in the business—the new DEPENDABOOK!

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WRITE TODAY

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MANUFACTURERS
ZUMBROTA • MINNESOTA



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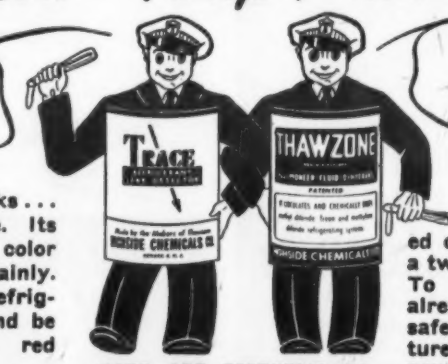


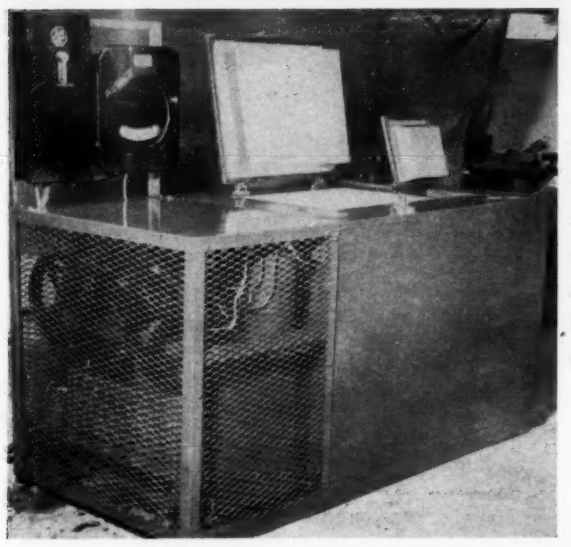

TRACE spots leaks . . . present or future. Its vivid stay-red color indicates them plainly. Add it to any refrigeration system and be ready for the red signal.

BOTH ARE ESSENTIAL TO REFRIGERATION MAINTENANCE

THAWZONE, in new, reconditioned or old systems, has a two-fold purpose: (1) To destroy moisture already present. (2) To safeguard against future trouble in systems now operating satisfactorily.

HIGHSIDE CHEMICALS COMPANY
195 VERONA AVE., NEWARK 4, N. J.

## New Refrigerated 'Machine Tool'



**LEFT is an industrial freezer made by the recently formed Industrial Cold Co. of Detroit. These self-contained cabinets will be produced to meet specific requirements in four temperature ranges.**

* * *

# Detroit Firm Will Produce 'Tailor-Made' Low-Temp Cabinets for Industry, Laboratory

DETROIT — Formation of Industrial Cold Co. in Detroit to manufacture low-temperature mechanically refrigerated cabinets for industrial and laboratory applications has been announced by Charles Earl and Ed Kellie, partners.

Earl heads Alpha Electric Refrigeration Co. while Kellie is president of Aminco Refrigeration Products Co., Inc., both Detroit firms.

The self-contained cabinets are "tailor-made" to meet specific requirements in four ranges of low temperature: 0° to -50°, -50° to -80°, -80° to -120°, and from -140° to -240° F., the company says, also pointing out that semi-production line techniques permit the custom-built cabinets to be manufactured and sold at low cost.

Industrial and laboratory uses for this "machine tool" are numerous, the manufacturer believes. Industrially it is being used for shrink fits, treatment of metals such as normalizing by intermolecular stabilization, speeding the aging of ferrous metals or retarding the aging of aluminum. In the pharmaceutical field it serves to dehydrate blood plasma and is vital in the production of streptomycin, as well as other products.

For the past two years Aminco Refrigeration has been producing subassemblies and Alpha Electric handling the final assembly operations on these cabinets.

Refrigeration system employs two stages of compression with high side floats, the latter being used in a somewhat unconventional arrangement, it is said. Depending on the temperature range desired, "Freon-12" or "Freon-22" is the refrigerant.

Several difficulties frequently encountered in low-temperature mechanical refrigeration and two-stage systems, such as the oil problem, have been eliminated in the design of Industrial Cold Co.'s machines, asserts the manufacturer.

The complete cabinets will be distributed nationally through direct representatives from company headquarters at 14550 Third Ave., Detroit.

## Walter P. Davis Organizes Air Conditioning Finance Firm

BUFFALO—Walter P. Davis, former executive secretary of the Air Conditioning Council of Western New York, has announced that he is organizing an air conditioning finance company.

The company, Davis said, will have offices in Boston and Los Angeles and will finance the purchase of air conditioning equipment used in retail and department stores.

## Refrigeration, A. C. Courses Scheduled for '49, '50 by Milwaukee Eng. School

MILWAUKEE — The Milwaukee School of Engineering has recently announced three curricula in refrigeration, heating, and air conditioning service which are scheduled for 1949 and 1950.

The refrigeration service curriculum lasts six months and is intended to prepare students to be refrigeration servicemen, mechanics, repairmen, salesmen, or assemblers.

The refrigeration and heating service curriculum adds another six months study to qualify for the occupations of oil burner installation and serviceman, ventilating man, heating and ventilating man, hot air furnace installer and repairman, or equipment salesman.

The refrigeration, heating, and air conditioning technician curriculum provides for an additional year's study to prepare students to be contractors, manufacturing foremen, salesmen, draftsmen, service managers, and refrigeration engineers.

# Safety Conference's Success Prompts Plans for Another One

CHICAGO—Chicago's first safety conference on boilers, unfired pressure vessels, and their safety appurtenances drew an estimated 275 manufacturers, inspectors, contractors, operating engineers, and others to the Congress hotel Jan. 13.

The conference was sponsored by the Boiler & Refrigeration Department of the city of Chicago in cooperation with the Chicago Boiler Manufacturers Association (CBMA) and the insurance companies which insure boilers and machinery in the Chicago area.

Gerald Gearon, supervising mechanical engineer of Chicago's Boiler & Refrigeration Department, and W. L. Killen, president of CBMA, were co-chairmen. At the conclusion of the meeting, Killen told the conferees that his organization would be glad to cooperate in making the conference an annual affair.

Said Gearon: "This meeting has been beyond my expectations. I hope we will be able to promote the same kind of meeting next year and invite other groups to cooperate."

The conference consisted of morning, afternoon, and evening sessions, and a luncheon, cocktail hour, and dinner. The morning session was devoted to a discussion on repair of low-pressure boilers, led by Ralph Anderson, of A. & J. Iron & Boiler Works.

Two topics were covered during the afternoon session: ASME code requirements for shop fabrication and inspection of welded pressure vessels; and selection, installation, inspection, and maintenance of automatic controls for high and low-pressure boilers.

Discussion of the first subject was led by L. G. Phillips, chief mechanical engineer, Chicago Steel Tank Co. Leader for the discussion on automatic controls was Nils Swanson, of McDonnell & Miller, Inc.

The evening session was given over to a discussion and report of the National Board of Boiler & Pressure Vessel Inspectors' tests of relief devices (hot water pressure relief valves, rupture discs, and steam safety valves). This discussion was led by David Johnson of the national board, substituting for C. O. Myers, national board secretary, who was unable to attend because of illness.

At the opening session, co-chairman Killen made a plea for cooperation between contractors and inspectors and elimination of "antagonism."

## Victor Products Names Cooper Sales Engineer In Southwest

HAGERSTOWN, Md. — Kenneth Cooper, formerly sales manager for Victor Products Corp. midwest sales division, has been named sales engineer for the southwest territory from Dallas, Tex.

Cooper will cover Texas, Arizona, Oklahoma, New Mexico, and Colorado.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NOW AVAILABLE with either DUCAL DRIERITE or SILCA GEL

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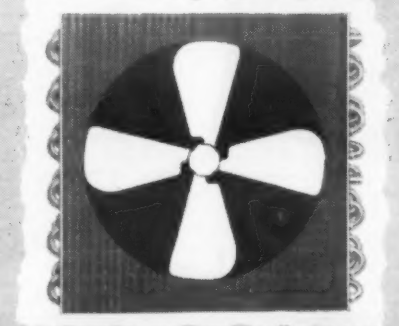
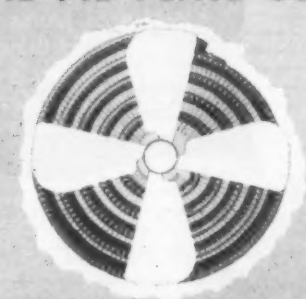


BLACK — COIL USED
GRAY — COIL WASTED

THE PIE PLATE COIL



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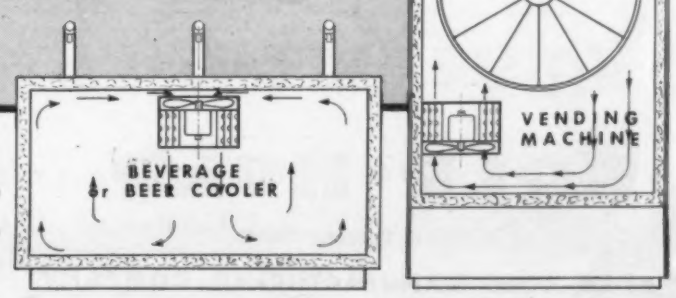


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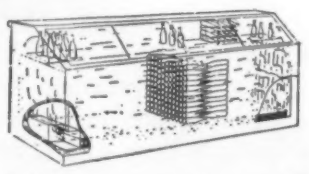

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I'LL SAY HE'S BACK... GET A LOAD OF THE FLORIDA TAN IN THE DOORWAY...
LOOKS LIKE WE WON'T HAVE TO PUT UP WITH VERMIN'S ALL-DAY AMATEUR HOUR MUCH LONGER...
LET'S SEE HOW PRACTICAL OUR PRACTICAL JOKER IS GOING TO BE NOW...
HE'LL BE DOING A VERY GOOD IMITATION OF A GUY OUT OF WORK IN ABOUT TWO MINUTES
JIMMY HATLO
GET THE HOOK!
THANX AND A TIP OF THE HATLO HAT TO REGINA HAYES 497 W BRITANNIA ST TAUNTON, MASS.
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Member, Audit Bureau of Circulations. Member, Associated Business Papers.

VOLUME 56, NO. 5, SERIAL NO. 1,037, JANUARY 31, 1949

# Bureaucrats Know What's Best For Everybody Else —They Think!

BUREAUCRATS who operate government-planned projects suffer from an endemic disease—they think they are ordained by God to tell other people how to live.

Case in point:

In Detroit, recently, James H. Inglis, Director of Public Housing, decreed that "low income" tenants of subsidized housing projects would be denied permits for the installation of television sets.

"They should save their money," he pontificated, "to make down payments on these homes."

Sure, he has a point.

Everybody should save money, and some day be a home owner. Everybody should be prudent. Nobody will argue with that premise.

But maybe some of these people aspire to a better home than the housing-project Quonset Hut or ducks-in-a-row unit they are occupying temporarily. Maybe they don't *want* to buy it over a 20-year period!

And how can Bureaucrat Inglis be sure that—if these occupants of his bureaucratic houses aren't allowed to buy what they want with the wages they receive—they may not squander the price of a television set in beer gardens or on fur coats?

**Most** people in all income brackets feel like spending a portion of their pay-checks on things they can enjoy and use immediately.

There are few families or individuals who save *all* their incomes—above and beyond a bare, unrewarding, unattractive, subsistence level—for boons possibly to be enjoyed 20 years later.

And it's a good thing for America that they don't.

When people work hard, they like to acquire tangible things which they can enjoy and keep and show off *now*—along with saving for the future in terms of insurance and payments on homes. It's that desire to get ahead *now* which provides the primary incentive for continuing to work hard for most people.

Important as it is, the desire for future security is a secondary incentive.

And we submit that it's far better for America's wage-earners—and for the nation as a whole—when the receivers of weekly pay-checks buy television sets, home freezers, and new cars on the instalment plan than when they fritter away a few dollars here and a few bucks there on gambling, carousing, and cheap gewgaws.

Most important of all, no Bureaucrat should ever have the power to force a wage-earner to spend his wages according to what the Bureaucrat deems is "best" for him.

That is the path toward Corruption and the Slavery of the Totalitarian State.

To be sure, home ownership is a good idea.

But please, Mister Commissar, let the people enjoy life and living too.

Let them have—please, sir—*freedom of choice.*

A-P Model 212 Adjustable Superheat Thermostatic Expansion Valve with Limiting Pressure Feature

*Simplify your service . . .*
*Improve System Efficiency with*

**DEPENDABLE**
**REFRIGERATION VALVES**

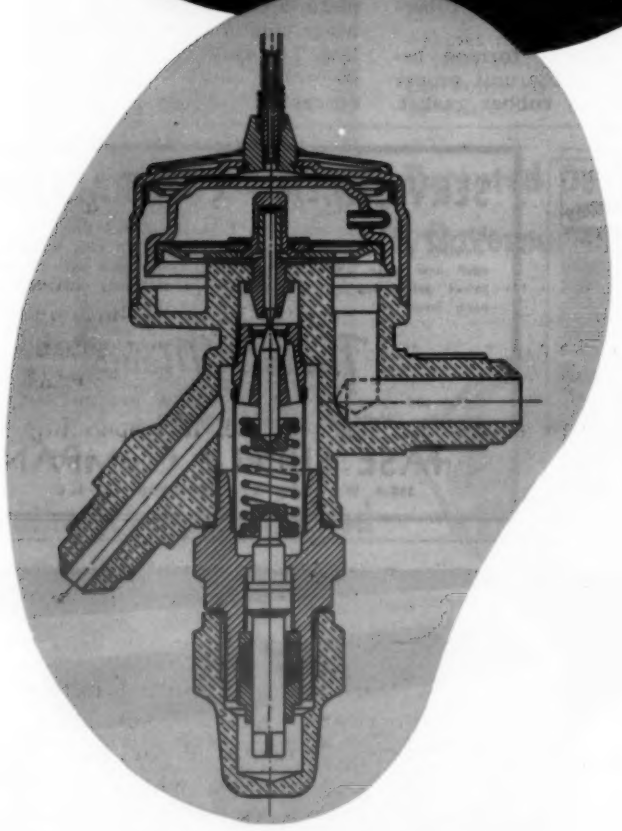
# When You Need a Pressure Limiting Valve . . .

## PUT ON THIS

# Model 212

VALUABLE addition to the already-complete line of A-P Thermostatic Expansion Valves, the new Model 212 provides welcome protection to many systems where abnormally high suction pressures during pull down or at sharp peak load may cause expensive motor overload and breakdown. It's good "performance insurance" on any system where motor overload may be indicated, and offers advantages never before achieved in a pressure limiting thermostatic expansion valve.

You may install the A-P Model 212 in place of any standard thermostatic expansion valve of similar capacity (½ and 1 ton Freon or Methyl). Like all A-P expansion valves, it is liquid charged and may be mounted in any position or ambient temperature without affecting the control-accuracy at the bulb. Operating suction pressure is limited to a predetermined setting by an exclusive and entirely new diaphragm unit. Should the system pressure build up to a point approaching overload, this diaphragm actuates the needle pin, allowing the valve needle to move towards the closed position, until the overload condition has passed. Then the valve operates in the normal manner to control superheat through the thermostatic bulb and sensitive large-area diaphragm, with accuracy and dependability typical of all A-P Valves.



Cross section of Model 212 showing new pressure limiting diaphragm unit, which opposes main diaphragm action when suction pressure becomes excessive.

Model 212 has an adjustable superheat range sufficient for all applications. It is available to limit pressures at 15, 40, and 55 lbs. Freon 12, and at 10 and 30 lbs. Methyl. Capacity, ½ and 1 ton Freon or Methyl. New Model 211 with fixed superheat, same capacity, is also available.

***Pick up the new A-P Model 212 at your Wholesaler, or write for Bulletin E-156, and condensed catalog.***

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Commutators

They are built as an original motor part—your assurance of an accurate all-around fit for correct operation. Liberal design provides extra strength, permits refacing several times, if necessary, with safety. Segments are accurately milled to facilitate connection of rotor leads. Get them now from your Wagner distributor. Name on request. M47-28

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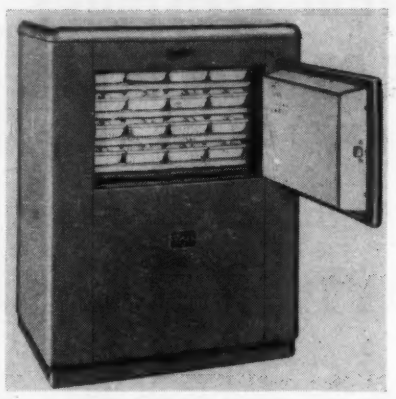
# What's New



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## 'Kubemaster' Can Turn Out 1024 Cubes Per Day

HUDSON, Wis.—United Refrigerator Co. here has announced a new ice cube maker which will be known as the "Standard Kubemaster" model.

The new Kubemaster is an economically priced unit making 256 cubes per freezing to the homes, hotels, and taverns where the demand is moderate for cube use, the company states. It will make four freezings per day and has an automatic temperature control for manual regulation of freezing.

It is built of auto-body steel and finished with Dulux enamel, the company indicates.

## Pump Permits Flexible Dishwasher Installation

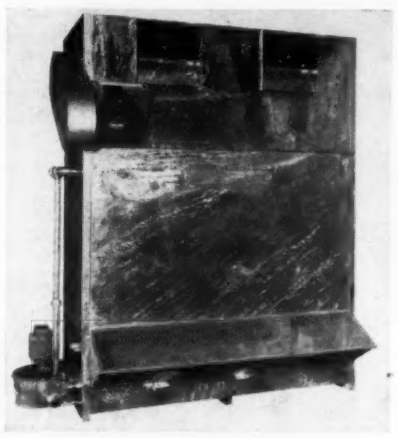
BRIDGEPORT, Conn.—Two new dishwashers which permit more flexible installation have been announced by C. J. Enderle, manager of the electric sink and cabinet division of the General Electric Co.

The addition of a pump assembly to both the electric sink and individual models of the electric dishwasher allows the appliance to be installed anywhere in the kitchen without direct connection of the dishwasher to the drain line, Enderle said.

A small centrifugal pump at the bottom of the dishwasher gear box, and driven by the main motor, pumps the dishwater through a drain hose and sink spout into the sink bowl or other existing drainage facilities.

Pump conversion kits are also available for use on standard line dishwashers, which, Enderle said, are exactly the same in dishwashing operation as the new models.

An addition to the company's standard line of dishwashers, the new pump models are already in limited production and will be introduced gradually to distributors.



* * *

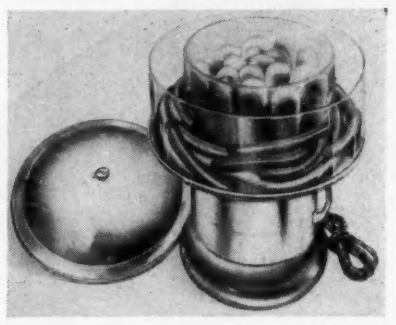
## Evaporative Condensers Have Steel, Copper Coils

JACKSON, Mich. — A new model evaporative condenser has been announced recently by Acme Industries, Inc. here.

All AP and FP models of the new condenser are built with ¾ in. full weight steel pipe coils, hot-dip galvanized after fabrication, the company said. FC models are made with copper tubing coils.

The base sump is built of 11 gauge panels, 11 gauge bottom panel, and 14 gauge rear panel. Included in the water sump is a Micromet water treatment basket for use in localities where corrosion and scale might occur.

## Combination Unit Steams Wieners, Warms Buns



CHICAGO — A new hot dog steamer and bun warmer combination that will hold about 6 to 8 lbs. of wieners and approximately two dozen buns has been introduced by the Dalason Products Mfg. Co., 835 W. Madison here.

The unit, called the model 602-3, consists of two transparent cylinders made of heatproof glass, a container to hold the water reserve, a cover, and an electrical element.

The manufacturer claims the unit will not discolor the wieners or sag the buns even during long periods of time if the adjusting knob is set according to instructions.

Over-all height of the steamer-warmer combination is 17 in. The outside glass container is 13 in. in diameter and the inner container 9 in. in diameter.

The lower container is 10 in. high by 9½ in. in diameter and is capable of operating 24 hours without refilling.

The unit is portable and operates from any 110-120 volt a.c. outlet. It pulls 675 watts.

By removing the bun container (the inner one) and replacing it with a standard 1-gal. bain marie, the unit can be used to serve beans, chili, or other such foods. Its capacity then would be about 15 to 20 lbs.

Suggested retail price is $49.50. Shipping weight of the unit is approximately 14 lbs.

## American Optical Cooler Cuts Lens Chilling Costs

SOUTH BRIDGE, Mass.—A completely new lens chilling unit for laboratory use has been announced by American Optical Co. here.

This chiller, said to be the first of its kind, incorporates a low temperature cold chamber providing "dry chilling" action to separate lenses cleanly and quickly. Present laboratory practice is to use ice and cold water for lens deblocking.

The unit contains a hermetically sealed, air-cooled condensing unit similar to that used in home refrigerators and handles 25 or more lens blocks. Factory adjusted to operate at 10° F., the unit features a built-in thermostat requiring no adjustment regardless of room temperature or climate.

The dry-chilling action of the unit separates pitch and lenses so cleanly that only a slight surface film remains. Because of this, savings in solvent costs as well as operator's time formerly used in cleaning lenses is possible.

Chilling time is approximately three to four minutes, depending on lens thickness. Cooling chamber walls are 3 in. thick, the cover is 2 in. thick, and both are filled with Fiberglas insulation.

A cold-proof seal is formed between the cover and the unit proper by means of a heavy rubber gasket.

Fast chilling action is provided because the entire bottom surface of the lens block contacts the aluminum chilling plate. Because of the plate and the 25 recesses, each block is positioned to eliminate scratching.

The chiller also separates pitch from lens blocks quickly and cleanly. The unit is finished in "Hammertone," metallic green, is of all-steel welded construction, has a recessed black toe plate, a full-length, chromium plated hinge, and is almost completely noiseless. The chiller operates on 110-volt, 60-cycle, single phase alternating current.

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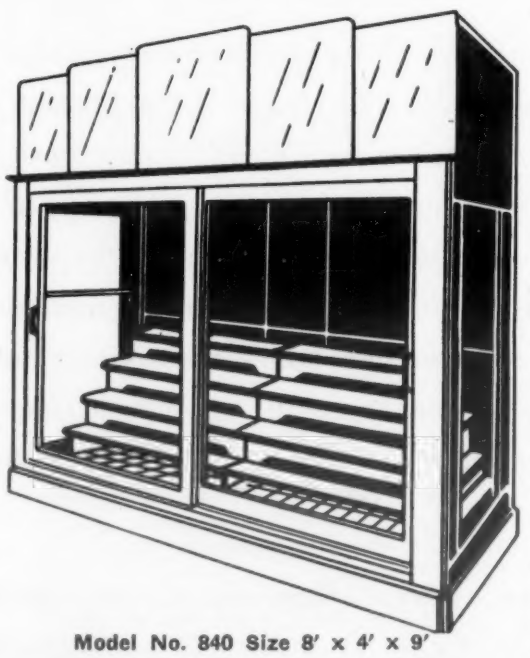
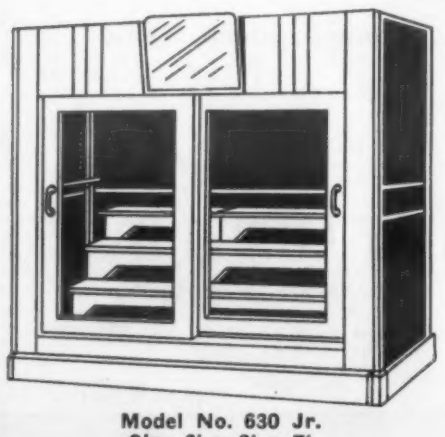


Model No. 840 Size 8' x 4' x 9'



Model No. 630 Jr.
Size 6' x 3' x 7'

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"Character" Florists' Display Refrigerators offer dealers more profit possibilities through a complete line designed to suit every florists' purse. Write in now. Things Look Fine For '49.

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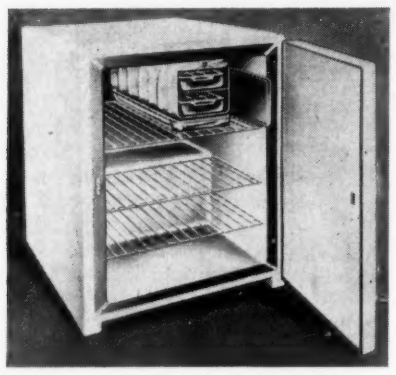
# What's New (Con't)

## Moss Atlas Corp. Announces 5-Ft. Table-Top 'Lo-Boy'



BROOKLYN — A new 5-cu. ft. table-top refrigerator that will fit in 2 sq. ft. of floor space has been introduced by the Moss Atlas Corp. here.

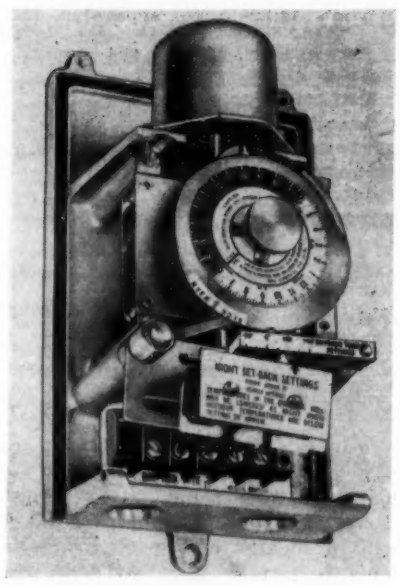
Measurements of the new "Lo-Boy" refrigerator are 24 in. wide, 34 in. high, and 24 in. deep.

Designed for use in small apartments, the unit can be fitted with a removable formica top that will form a kitchen table with a surface of approximately 4 sq. ft., according to the company.

The Lo-Boy contains three nickle-plated full-width shelves, two aluminum ice trays that will make 56 ice cubes at one time, and a deep glass chiller tray for meat storage. The shelves are fitted with stainless steel springs to prevent rattling, tipping, or slipping.

The unit is made of one piece steel and finished in porcelain enamel. It has rounded corners and a rolled front edge. Door gaskets are of cushioned rubber.

A light automatically turns on when the refrigerator door is opened. Moss Atlas, located at 244 Herkimer St. here, announced that it will continue to make its 3½-cu. ft. Lo-Boy along with the 5-cu. ft. model.



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## Weather-Chron Controlled By Outside Temperatures

CHICAGO — A fully automatic "weather actuated" control for the night set-back of building temperatures has been introduced by the Weather Controls division of Automatic Devices Co., 53 W. Jackson Blvd. here.

Called the Weather-Chron, the new control differs from other day-night switches, according to the company, in that it is installed on the outside of the building.

"Instead of setting it for the time heating is to start," the company explained, "it is set to the time the building is to be warm every morning. The shutdown time is set at the earliest time heating may be shut down in the evening in mild (60° F.) weather.

"The Weather-Chron anticipates the building's needs for heat and automatically changes the time heating starts each morning and shuts down each evening as the weather changes, starting heating earlier the colder it is outdoors.

"During the day, the regular room thermostat maintains building temperatures at the comfort level. Where desired, a low night stat may be used as a low limit control.

"A new and important feature of this unit is that on extremely cold nights when outdoor temperatures drop below a pre-selected level, building temperatures will be held at the daytime level throughout the night."

The company pointed out that the Weather-Chron can be added at any time and used directly with any existing thermostatic controls.

## Portable Room Humidifier Evaporates 9 Gals. a Day

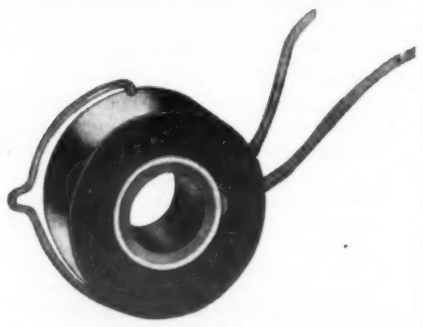
IRVINGTON, N. J. — A cabinet model portable room humidifier that can evaporate 9 gals. of water per day, is being manufactured by the Walton Laboratories here.

The unit embodies a humidistat for automatic control and is finished in a walnut grain.

This model, which retails at $222.50, is part of a complete line which includes two automatically controlled cabinet models and two table models.

Walton Laboratories has been in the home humidification business for 14 years.

## Patented Device Replaces Governor and Contactor

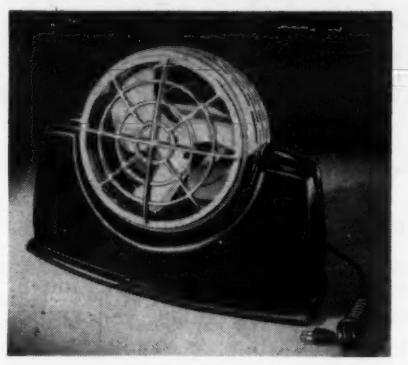


CHICAGO—A patented centrifugal device to replace both the governor and contactor on all makes and models of split-phase and capacitor motors up to ¾ hp. is now being manufactured by the Pres-on Switch Co. of Winston-Salem, N. C. and sold exclusively by the Complete Reading Electric Co., Inc. here.

The Pres-on switch is a self-contained unit that presses on to the motor shaft, taking up no more space than an average governor, according to Complete Reading.

Complete Reading officials said that regional jobbers for the device will be appointed at a later date. All inquiries should be directed to the company at 100 S. Jefferson St. here.

## Fresh'nd-Aire Develops Highly Styled Circulator Line



CHICAGO—Development of a completely new 1949 line of highly styled air circulators for home use was disclosed recently by the Fresh'nd-Aire Co., Division of Cory Corp. The new line consists of two circulators, the Model 90 (9-in. propeller) and the Model 120, (12-in. propeller) and represents a radical departure from conventional designs in air circulating equipment, according to company officials.

A heavy, molded-plastic, cabinet-type base acts as a cradle for the circulator housing which is mounted on a horizontal axis. This new mounting arrangement permits finger-tip directional control of the air flow. The circulator housing may be turned on its axis from an air flow parallel to the floor to straight up, thereby combining all the advantages to table model and floor or window model fans in a single air circulator, the company claimed.

In the construction of the new models, great emphasis was placed on styling and design. The plastic cabinet-type design and the new mounting of the circulator housing have made possible a new modern styling that will blend with any home setting.

The base is one piece, molded of deep, mottled mahogany finished plastic. The guard is also of heavy, molded plastic and is light tan. The plastics used are stain-resistant, and less subject to minor nicks, mars, and scratches than metal. In addition, the use of plastics has reduced the weight considerably.

The cowling, finished in a light tan color, is widely perforated for free flow of air. This is important, say company engineers, because it not only allows more efficient operation, but reduces propeller noise as well.

The new propellers are three-bladed, with a deep pitch for maximum air delivery. The patented blades are an exclusive Fresh'nd-Aire development.

The model 90 has two speeds which are controlled by a speed switch mounted on the back of the cabinet. It is 17½ in. long, 13 in. high, and 9 in. deep. Packed for shipment, the unit weighs 12 lbs. Maximum wattage of the model 90 is 50 watts. The unit will retail for $32.50 including Federal excise tax.

The model 120, has three speeds. The control switch is mounted on the back of the cabinet. It is 21 in. long, 16½ in. high, and 10⅝ in. deep. Maximum wattage is 90. The unit weighs 16½ lbs. for shipment. Retail price is $42.50, including Federal excise tax.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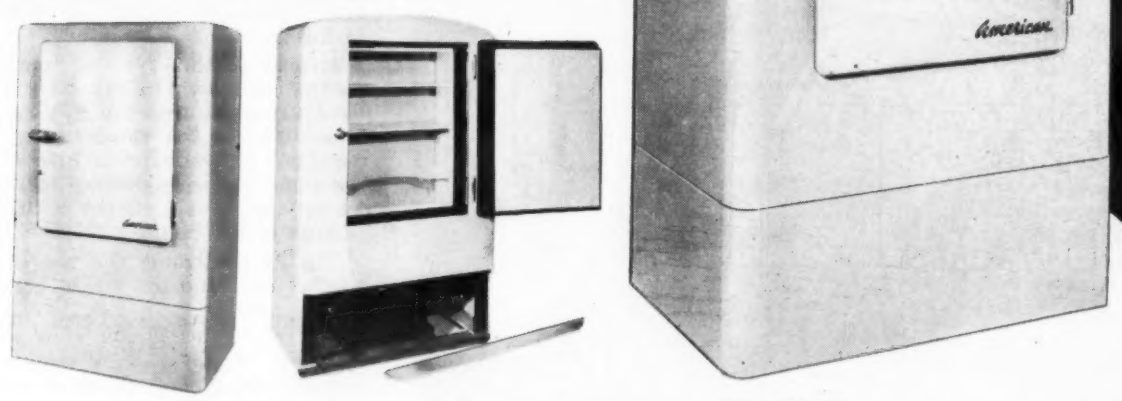

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AMERICAN offers you UPRIGHT FREEZERS in two sizes, a 14 cu. ft. and a 17 cu. ft. model for freezer users who want the utmost in convenience. These Freezers are sectionalized, equipped with self sealing coupling so that bottom can be removed for easy handling. Write for prices and specifications.

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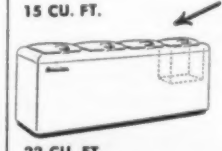
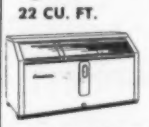


22 CU. FT.



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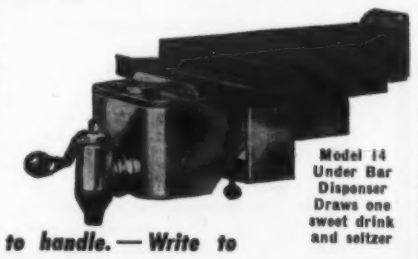

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**Readers who have any questions regarding the application of air conditioning are invited to write to Mr. LaSalvia, the author of this series, who will be pleased to furnish a complete and detailed answer free of charge. This is another of the services provided by the NEWS.**

## *Automatic Controls (Cont.)*

Fig. 22 shows another location where heating coil may be placed instead of the way it is shown in Fig. 21.

The control equipment is the same as in Fig. 21 in every respect and operates in the same manner.

In the scheme, heating coil of higher velocity and smaller face area than the cooling coil can be used.

Fig. 23 shows controls where humidification is required in the winter season and which must be included in the air conditioning system, which is designed for cooling and heating.

The refrigeration controls may be any one shown in Figs. 16, 17, 19, and 20.

The humidification system consisting of spraying water in the air stream, is usually located between the cooling and the heating coils. A manual setting humidistat ($H_1$) is placed in the return air duct or in the room itself (best practice should be in return duct), and opens or closes water solenoid valve ($S_W$) in water line to sprays.

When the humidity in the room rises above setting of humidistat, the water solenoid valve is closed; conversely when humidity in room drops below setting of humidistat, the water solenoid valve is opened.

The spraying should always be done against the airflow if possible. This will allow the air to come in better contact with the water than if spraying was accomplished in the path of the airflow. This will mean greater moisture pick-up, which is desired. It is much better, if possible, to use hot water instead of cold water for spraying for humidification.

Fig. 24 is in every respect the same as Fig. 23 except the spraying is accomplished against the heating coil. This set-up is usually used when cold water is used for spraying. The heat from the steam coil is passed to the water to help the absorption of water by the air.

Fig. 25 shows a closer room temperature control than is shown in Fig 23. It consists of a room-heating thermostat controlling both the automatic steam valve on heating coil and the face and by-pass dampers. This method is very effective for close control as it employs the by-pass arrangement. This by-pass arrangement eliminates overheating during mild outside weather.

Fig. 26 illustrates controls that can be used for a summer and winter air conditioning system utilizing the zone control. In this setup, steam should be available all year-round.

Any type of refrigeration control as shown in Figs. 16, 17, 19, and 20 can be used with the exception that instead of controlling from the room with a room thermostat, a duct thermostat ($T_c$) located at the discharge side of fan is used. This thermostat is to keep a constant temperature leaving the cooling coils.

Individual heating coils are placed in each duct leading to each zone. As many zones as required can be used as long as there is a heating coil in each zone duct. Fig. 26 shows four zones.

A room heating thermostat ($_HT_m$) is located in each zone, which controls its individual automatic steam modulating valve ($V_m$) on its individual heating coil in its individual zone duct. Whenever the temperature in the room drops below the setting of the room heating thermostat, the thermostat will open the steam valve just enough to raise the temperature in the room to the setting of the thermostat.

A humidistat ($H_1$) is located in the return air duct to operate the automatic water solenoid valve ($S_W$) in the water line to the sprays. This humidity control operates in same manner as the humidity control described for Fig. 23.

In the above setup, all of the air for each zone passes through the heating coils at all times, and the room thermostat opens or closes the steam valve to control temperature in the room.

Instead of this type of control, a control as shown in Fig. 27 may be used. This employs the by-pass system. This is for closer room temperature control, and it operates in the same manner as shown in Fig. 25 except that it is installed in the duct instead of the casing.

Fig 28 illustrates the use of preheater and reheater steam coils for winter heating.

The preheater steam coils should be used whenever it is required to use outside air of at least 50% of the total air for heating, and when the outside temperature does not fall below 10° F.

The modulating type room thermostat ($_HT_m$) in the space operates the modulating automatic steam valve ($V_m$) located on the steam line to reheater coil, to open or close according to the demand in a modulating fashion.

The preheater coil which consists of only one row of tubes, does not function until the outside temperature falls below 35° F. When the outside temperature falls below 35° F. a temperature controller, two-position type ($_cT_2$) located in the outside air duct, opens wide the two-position automatic steam valve ($V_2$) to the preheater coil. This places the preheater coil in full operation, and it remains in operation until the outside temperature rises once more above 35° F. when the automatic steam valve ($V_2$) is closed tight.

With this same type of control, especially when using 100% outside air for heating, and the outside temperature falls to 10° F. and lower, it is necessary to use two preheater coils, each coil having its own control.

The first preheater coil would come into operation when the outside temperature falls below 35° F. and on lowering outside temperature the second preheater coil would come into operation at 10° F. Conversely, when the outside temperature rises above 10° F. the second preheater coil would be taken out of operation and on further temperature rise the first preheater coil would be taken out of operation when the temperature goes above 35° F.

*(To Be Continued)*

### Diagrams Show Additional Air Conditioning Control Hookups

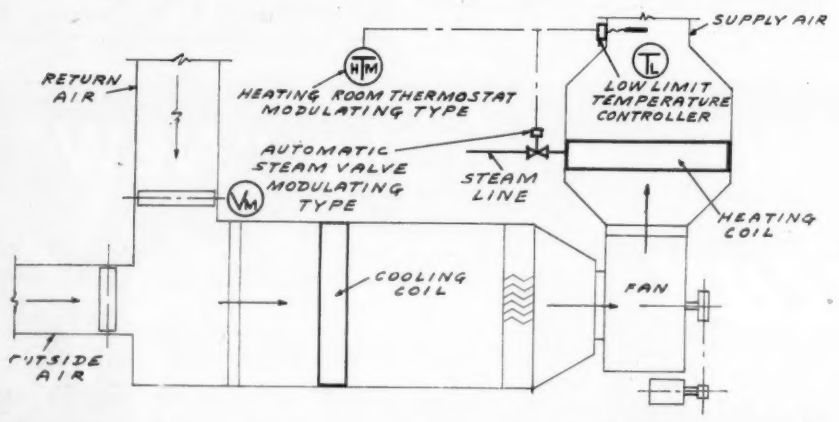


*Fig. 22 shows the control hookup recommended with the heating coil installed after the fan.*

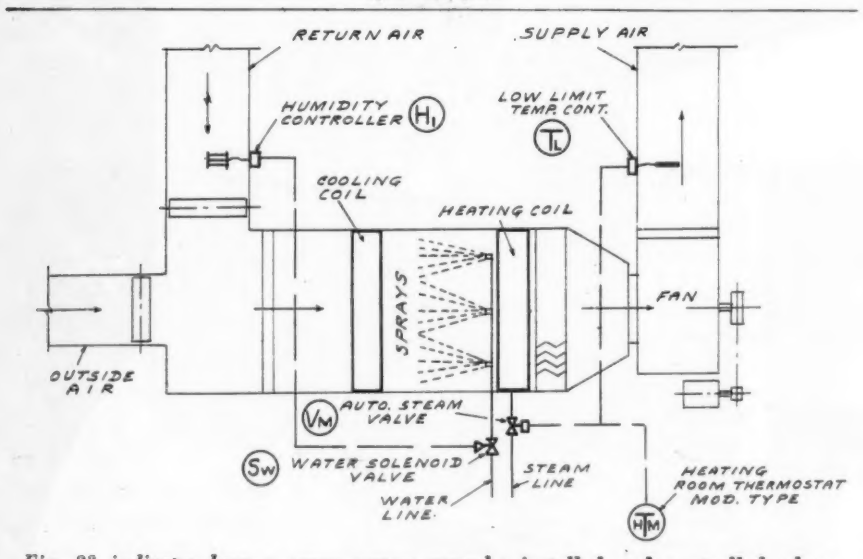


*Fig. 23 indicates how a spray system may be installed and controlled where humidification is required.*

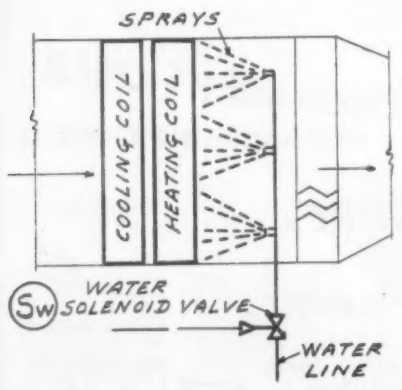


*Fig. 24—This is the same as Fig. 23, except that the sprays go on the heating coil.*

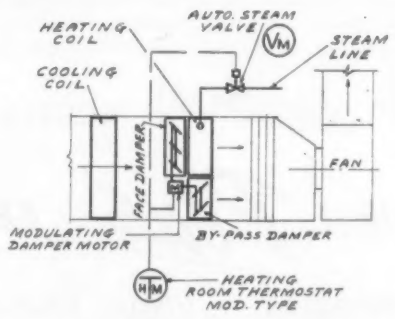


*Fig. 25—Closer room temperature control than achieved in Fig. 23 is provided by this arrangement, which includes a by-pass for mild weather operation.*

### Many Variations Are Possible In Control Arrangements

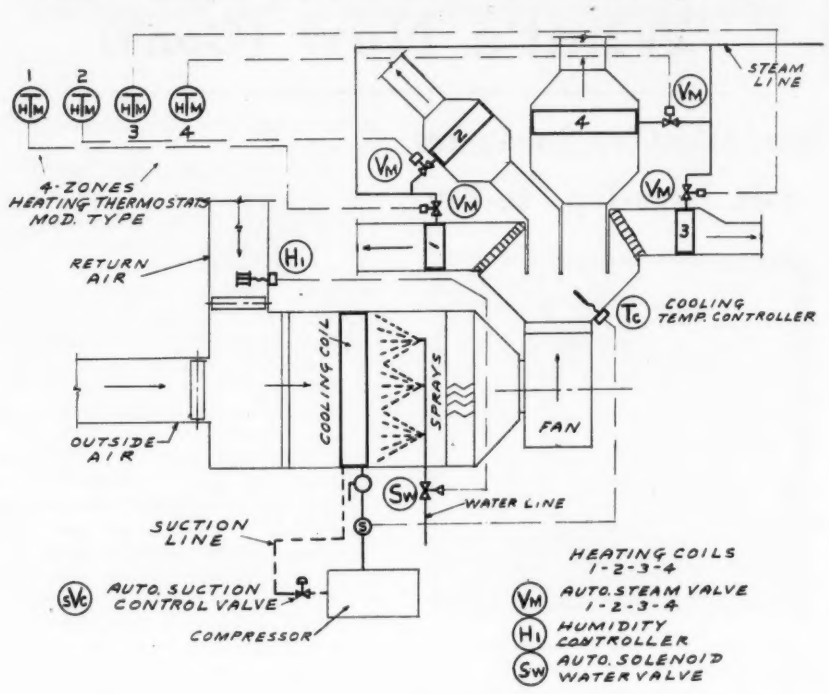


*Fig. 26—Where zone type control is advisable, this type of control arrangement may be employed in a year-round air conditioning system. Steam should be available throughout the year, however.*

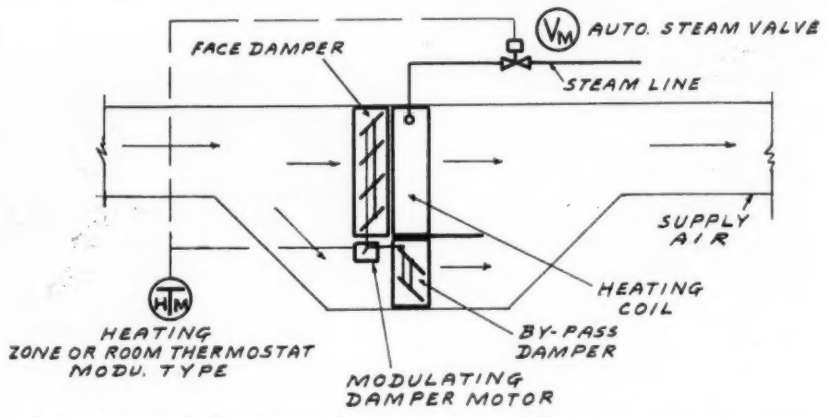


*Fig. 27—By using this by-pass hookup, closer control over a zoned system can be achieved than with the system diagrammed in Fig. 26.*

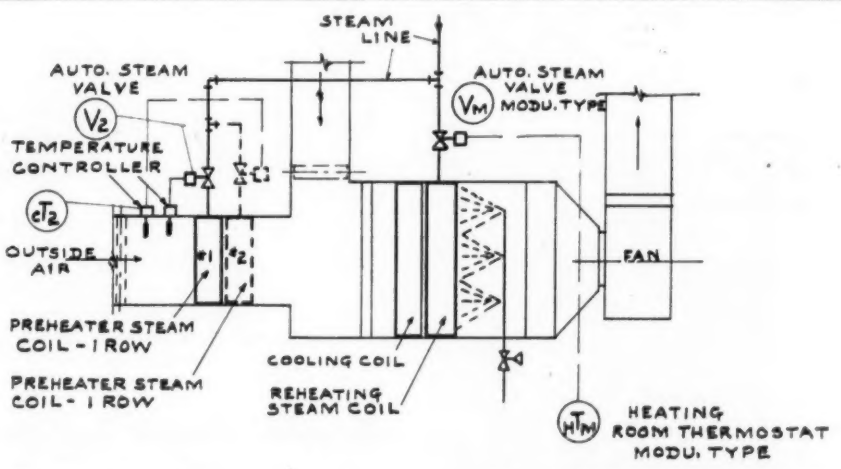


*Fig. 28—How preheater and reheater steam coils should be incorporated into a system and controlled is indicated in this layout.*


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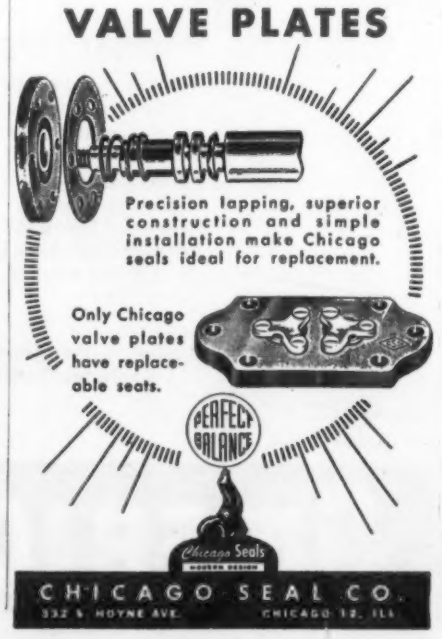

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# Movies for the Trade

## *New NEMA Film Guide for 1948-49 Contains Many Titles On Refrigeration Service, Freezers, Other Appliances*

NEW YORK CITY — A movie guide to 301 current 16 mm. films "of electrical significance" has recently been published by the National Electrical Manufacturers Association, 155 E. 44th St. here.

The book, called the "Nema Movie Guide of 16 mm. Electrical Films, 1948-49 Edition," contains listings of 31 education films bearing on refrigeration service, home freezers, and other major appliances.

The other films range in subject matter from a pictorial survey of the construction of the Alaska Highway to the principles of electromagnetism.

The guide is arranged alphabetically by title of film. Information given includes the running time, whether in color, the sale or rental price, release date, producer and distribution source, and rating as to type of audience for which the film is suited. A short description of the contents of the film is also given.

The preface to the guide states: "The electrical films listed in this 'Nema Movie Guide' are not exclusively those produced by electrical manufacturers.

"The films represent many industries, all interdependent upon one another for their products, but all jointly contributing to the glorious Electrical Age in which we live."

Fourteen of the films are part of a refrigeration service series produced by the U. S. Office of Education and distributed by Castle Films division of United World Films, Inc. The latter organization has offices at 445 Park Ave., New York, 22; 135 S. La Salle St., Chicago 3; and the Russ building, San Francisco 4.

All in this series are sound films and most were produced in 1945. They are listed below with title given first, then running time and purchase price.

Adding or Removing Refrigerant. 17 min. $29.29.

Adjusting and Checking the Expansion Valve. 21 min. $32.87.

Adjusting and Repairing the Thermo-Expansion Valve. 21 min. $22.88.

Adjusting Commercial Thermostatic Controls. 12 min. $22.15.

Adjusting Pressure Actuated Temperature Control Devices. 15 min. $27.15.

Checking and Replacing a Float Valve. 19 min. $31.44.

Checking the Electrical System. 17 min. $29.29.

Checking the System. Part I: General Procedures. 17 min. $29.95.

Checking the System. Part II: Trouble Shooting. 17 min. $22.29

Locating and Repairing Leaks. 17 min. $29.29.

Quieting a Noisy Refrigerator. 16 min. $27.88.

Removing and Installing a Compressor or Condenser. 17 min. $28.58.

Removing and Installing a Cooling Unit. 19 min. $31.44.

Servicing Water Cooled Condensers. 12 min. $22.88.

Castle also has two other sound films listed that apply to refrigeration, though not part of the service series. They are:

Across the Line Starters. 15 min. $26.43.

Mechanical Refrigeration—How It Works. 22 min. $28.56.

The School of Education, Syracuse, N. Y. Has a sound film listed, called Principles of Refrigeration. This film has a running time of 10 minutes and is available on a rental basis for $1.50.

Five films devoted to the home freezer are listed in the guide. They, and their distributors, are listed as follows:

Five Days in the Cooler. 12 min. sound, color, McCall's "Home Making Films," $100, Instructional Films, Inc., 330 W. 42 St., New York 18, % Miss Zveski.

Frozen Foods. 40 min. sound, color, loan, General Electric Co., Distribution Section, Advertising and Sales Promotion Divisions, Schenectady 5, N. Y., or George B. Park, Advertising Department, Bridgeport 2, Conn.

Frozen Freshness. 30 min. sound, color, loan, 1946, General Motors Corp., 3044 W. Grand Blvd., Detroit 2, or 405 Montgomery St., San Francisco 4.

The Home Freezer. 12 min. sound, color, McCall's "Home Making Films," $100, Instructional Films, Inc.

Surprise for Janie. 24 min. Sound, color, loan, 1948, Nash-Kelvinator Sales Corp., 16 W. 61st., New York City.

Other films pertaining to major appliances are:

Don't Blame It on the Oven. 19 min, sound, color, loan, 1942, General Electric Co.

Electrical Safety. 30 min. silent, University of Alabama, Department of Visual Aids, University of Ala.

Forty Million Enemies. 25 min. sound, color, loan, 1941, Westinghouse Electric Corp., Film Section, Box 868, 511 Wood St., Pittsburgh 30.

Home Electric Appliances. 11 min. sound, rent $1.50 Illinois, $50, 1944, Encyclopedia Britannica Films, Inc., 20 N. Wacker Drive, Chicago 6.

How to Get the Most out of Your Refrigerator. 20 min. sound, color, loan, 1943, General Motors Corp.

Into the Suds and Out. 12 min. sound, color, McCall's "Home Making Films," $100, Instructional Films, Inc.

Ironing Can Be Easy. 20 min. sound, color, loan, 1947 Proctor, Modern Talking Picture Service, Inc., 9 Rockefeller Plaza, New York 20, N. Y. (Field libraries located in cities all over the country.)

Kitchen Magic. 12 min. sound, color, McCall's "Home Making Films," $100, Instructional Films, Inc.

There's Nothing To It. 20 min., sound, loan, Westinghouse Electric Corp.

# Refrigeration Problems

## and their Solution

*by Paul Reed*

**For Service and Installation Engineers**

Paul Reed

## Motor Trouble (5)

### HISTORY OF MOTOR APPLICATIONS ON REFRIGERATION COMPRESSORS

In the early days of electric refrigeration, condensing units were of the "open," or belt-driven type, using expansion valves or float valves, which maintained high discharge pressures between the running cycles, and therefore required starting torques of about four to five times full-load torques.

For these high starting torques, the repulsion-start, induction-run single-phase motor was almost universally used. In late years the repulsion-induction motor has been largely supplanted by the split-phase on hermetic units equipped with means such as the substitution of a capillary tube for expansion valve or float valve, for equalizing the pressure throughout the system during the off-cycle. This greatly reduces the amount of starting torque required and permits the use of the split-phase motor which has a starting torque of only about 175% of full-load torque.

Moreover, the repulsion-induction motor has a commutator, brushes, etc., that makes it unsuitable to put in the hermetic case where the motor is exposed to refrigerant and oil. On the other hand, the split-phase motor has no such parts except the starting switch and it was found quite easy to put it outside the motor and operate it by current, voltage, or a timer as previously described.

Even on the open-type units, the capacitor-start, induction-run motor has largely supplanted the repulsion-induction motor, for it is much cheaper to build. Also much more dependable starting capacitors were developed.

The capacitor-start, induction-run motor is very similar in design and construction to the split-phase motor to which is added a capacitor which adds very greatly to its starting torque. Capacitor-start motors generally have starting torques of from about three to five times full-load torque. They are not as suitable in the large as in the small fractional horsepower sizes as the larger sizes require very large capacitors in order to give them adequate starting torque and this makes the motors both bulky and expensive.

### THE REPULSION-INDUCTION MOTOR

The so-called repulsion-induction motor is more properly a repulsion-start, induction-run motor, for after it gets up to about two-thirds speed it becomes an induction motor the same as the split-phase or capacitor motor. However, it has a wound rotor, brushes, commutator, etc., necessary to a repulsion motor.

At about two-thirds speed a centrifugal switch lifts the brushes off the commutator (or leaves them on, in some types), and short-circuits the commutator so that the wound rotor becomes the same as a squirrel-cage rotor used in the split-phase and capacitor motors (and in three-phase motors also) and the motor then runs as a straight induction motor. The repulsion motor develops high torque, so the repulsion-induction motor has a starting torque of from five to six times the full-load torque.

If a repulsion-induction motor does not get up to speed quickly, it is almost always due to:

1. Poor commutation. Commutator dirty, rough, grooved, mica high, brushes worn so much that they no longer make good contact, or are dirty, springs weak, brushholder set at the wrong point, etc.

2. Overload. If a repulsion-induction motor will not pick up and accelerate a load of at least one-half again as much as full load, something is really wrong for this type motor is able to start very heavy loads.

3. Low voltage. This type motor will stand quite a bit of under-voltage and still pick up heavy loads, but it must have full voltage to give its best performance. Under-voltage is characterized by sluggish starting, something like overload causes. Take off the belts if possible, and if the motor then snaps to full speed quickly, the cause is more apt to be overload than under-voltage.

### DISCUSSION OF POLYPHASE MOTORS

Not much has been said of three-phase or two-phase motors, known as polyphase (many-phase) motors. Except for some variable speed applications and some installations requiring some exceptionally high starting torque, on which slip-ring polyphase motors are used, and some large compressors on which synchronous motors are used, practically all refrigerating compressors above 2 hp., two or three-phase are driven by squirrel-cage motors.

They are very simple in construction, consisting of three sets of coils in the field windings (two sets for two-phase motors) and a "squirrel-cage" rotor that has no windings and is thus similar to the one in split-phase or capacitor motors. It has no brushes, commutator, starting switches, capacitors nor separate starting coils. It has good constant-speed characteristics and develops starting torques of from two and one half to three times full-load torque, which, although it is not as high as that of the repulsion-induction motor is enough if the installation is carefully designed.

Except that it does not have a very high starting torque, the squirrel-cage polyphase motor is almost ideal for constant-speed applications, and requires very little service except keeping it clean and its bearings properly oiled.

If it does not seem to start or carry the load properly, you should first check for under-voltage and then for overload.

There are three wires leading to a three-phase motor, and each pair carries one phase. If the fuse is blown on one line or it is open for some other reason, there is only *one* phase left not *two*. If this happens when the motor is running up to speed and is not very heavily loaded, the motor may go ahead and run so nearly normally as for the difference to be unnoticed, unless one of the overload relays open. But if the motor tries to start with only one phase it will have almost no starting torque.

On three phase always test:

1. Between the center wire and the outside left wire.

2. Between the center and the right outside wire.

3. Between the two outside wires.

The voltage should be the same on all three. If it varies over two or three volts on a 220-volt motor, the lines are unbalanced and must be checked and the single-phase loads more equally distributed.

*(To Be Continued)*


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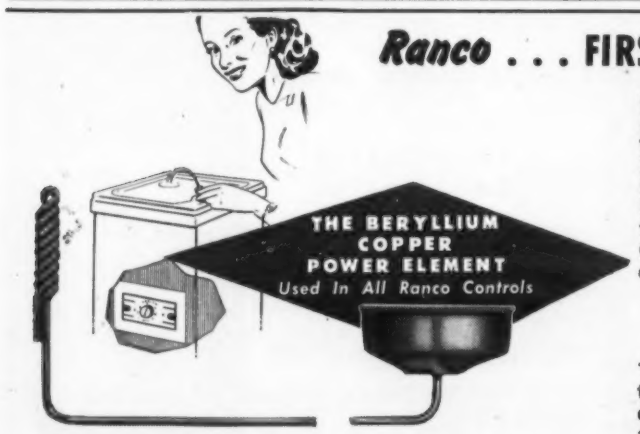


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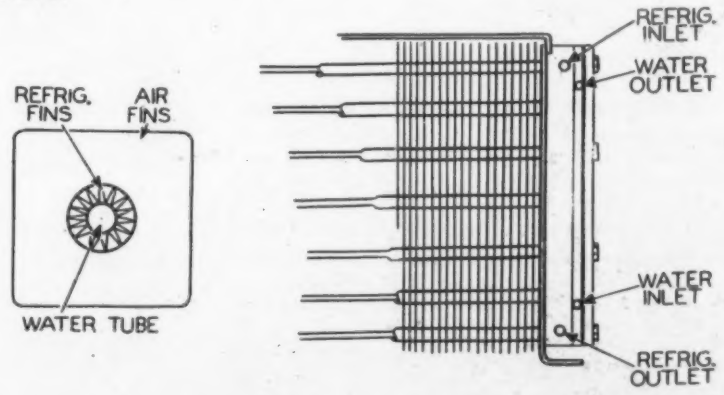


Fins in refrigerant tube transfer heat through many extra square feet of surface. Maximum outside air surfaces provide efficient air cooling. When air temperature reaches 80°F. water valve operates.

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# Servicemen Can Install Capillaries If They Follow Correct Procedures

DETROIT—"It is possible for the service shop to make successful conversion to a capillary providing the serviceman is willing to follow these instructions:

"(1) Be sure that both the high and the low sides are properly designed for capillary application.

"(2) Make the proper capillary selection.

"(3) Process carefully to insure a clean, dry job properly charged with refrigerant."

This was one of the points discussed by L. A. Staebler, director of research and development for Universal Cooler division of International Detrola Corp. in a talk on capillary tubes given before the Detroit Section of the American Society of Refrigerating Engineers.

"Unless the serviceman is able to comply with the instructions outlined above, conversion to or rework of a capillary system is not recommended," he emphasized, however.

In recounting briefly the development of capillary tubes as refrigerant metering devices, Staebler pointed out that their popularity with manufacturers, especially producers of household refrigerators, has grown with the introduction of "Freon" refrigerants and the hermetic compressor.

Design of hermetics can be such that there is no leakage of refrigerant; high standards of cleanliness and dehydration are obtainable in their manufacture, and oil is circulated with the refrigerant at a controlled, uniform rate of flow. These three characteristics are essential for satisfactory operation of capillary systems, Staebler indicated.

"The popularity of the capillary tube with the manufacturers of package-type refrigerating systems is obvious when one considers the cost-saving characteristics and other advantages.

"Most outstanding characteristic is its simplicity. It is simply a small diameter liquid line connecting the high side to the low side and is usually soldered to the suction line for exchange purposes. Because of the pressure drop caused by the length and the small bore of the tube, it controls the flow of refrigerant to the low side. There are no moving parts, and the capillary is merely substituted for the conventional liquid line."

### *Ambient Is Important*

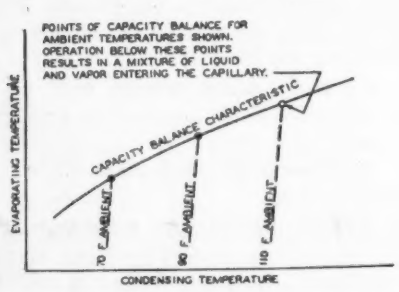
POINTS OF CAPACITY BALANCE FOR AMBIENT TEMPERATURES SHOWN. OPERATION BELOW THESE POINTS RESULTS IN A MIXTURE OF LIQUID AND VAPOR ENTERING THE CAPILLARY.
CAPACITY BALANCE CHARACTERISTIC
EVAPORATING TEMPERATURE
CONDENSING TEMPERATURE

**Fig. 1 shows that only one capacity balance point exists in a capillary system for a given ambient temperature.**

### *Offers Several Advantages*

In addition, he pointed out, the capillary tube permits:

(1) The use of a less expensive, low-starting torque motor such as the split-phase type because the capillary permits the "unloading" or balancing of pressures between the high and low sides during the off cycle.

(2) A reduction in the amount of refrigerant charge.

(3) The elimination of the liquid receiver.

These economic advantages "are compelling reasons for using a capillary tube whenever possible on a hermetic refrigerating system that is mass-produced for a highly competitive market," commented Staebler.

That the capillary likewise has disadvantages was readily admitted.

"It should be used only with hermetic type compressors. The amount of refrigerant charge in a capillary system is critical, and with an open type compressor, there is always the possibility of refrigerant leaking around the compressor seal. Even a small leak could make the system inoperative in a short time," he explained.

"Capillaries are also inherently less efficient than expansion valves, and both the high and low sides must be specifically designed for capillary application. It also usually requires extensive laboratory development to achieve proper balance between capillary and condensing unit."

Discussing the very important problem of "capacity balance," Staebler defines it as "that condition of balance between condensing unit pumping capacity and capillary flow capacity which results in a refrigerant liquid seal at the entrance to the capillary without liquid refrigerant building up in the high side."

With the capillary having a "fixed resistance to flow, its capacity to pass liquid refrigerant is necessarily dependent on the physical properties of the properties of the refrigerant and on the difference in pressure between the high side entrance and the low side exit of the capillary.

"Neglecting for the moment the effect of the physical properties of the refrigerant, it is obvious that the higher this pressure difference, i.e., the higher the high side pressure and the lower the low side pressure, the greater is the amount of liquid refrigerant that can be passed."

### *Efficiency Range Narrow*

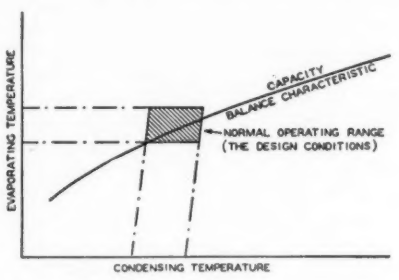


**Fig. 2—The normal operating range for peak efficiency of operation is closely limited by the capacity balance characteristic.**

However, he explained, the pumping capacity of a compressor drops with an increase in discharge pressure and/or a decrease in suction pressure, so a condition of balance is attained when the condensing unit output exactly matches the ability of the capillary to pass refrigerant. Only one such capacity balance exists for any given ambient temperature with a single system, as indicated in Fig. 1.

Peak efficiency is achieved with a capillary system when it is operating at capacity balance conditions, Staebler said. (See Fig. 2.) When the system operates at below the capacity balance point, the capillary can pass more refrigerant than is delivered by the compressor so that a mixture of vapor and liquid is delivered to the evaporator. This causes a loss in the capacity of the over-all system.

Operating at conditions over the capacity balance point will mean that the compressor will pump more liquid than the capillary can handle, so the liquid refrigerant will back up in the high side, raising the discharge pressure until it is high enough to overcome the resistance offered by the capillary. High discharge pressures decrease the capacity of the condensing unit.

"It is thus evident that the employment of a capillary must represent a compromise between desired design and practical limitations inasmuch as the refrigerating system may often be required to operate at pressure conditions other than those necessary for capacity balance."

### *Factors Influencing Balance*

There are several factors which influence the capacity balance characteristic, Staebler explained. These include:

(1) Capillary bore and length.
(2) Compressor capacity.
(3) Oil circulation rate.
(4) Heat exchange between capillary and suction line.

The bore and length of the capillary govern the resistance to refrigerant flow offered by the capillary, the smaller the bore and/or the greater the length, the more resistance. Increasing this resistance lowers the capacity balance characteristic; decreasing capillary resistance conversely raises the capacity balance characteristic.

If the compressor or displacement is raised while the capillary resistance remains unchanged, the characteristic will be lowered, while reducing the compressor capacity will raise it.

Amount of oil circulated through the system with the refrigerant is an important factor affecting capacity balance also, he indicated. The more oil that is circulated the greater the viscosity of the refrigerant-oil solution and the lower the characteristic. Oil carryover from the compressor of up to 3% does not seriously influence the action, but beyond this point is dangerous, Staebler commented.

"The heat exchange relationship between the capillary and the suction line, or low side, is of the utmost importance," he emphasized. It has been determined that the capacity balance characteristic may be raised as much as 20° in evaporating temperature through the use of heat exchange.

"This phenomenon is caused by heat exchange cooling the refrigerant passing through the capillary and condensing or preventing the formation of flash-off gas that forms in the capillary as the pressure progressively drops from high side to low side pressure. It is good practice to utilize sufficient heat exchange between capillary and suction line to superheat the suction gas returning from the evaporator to as near condensing temperature as practical. . . .

"A capillary and heat exchanger assembly in accordance with the foregoing and giving the desired characteristic does not necessarily represent the final design," cautioned Staebler. "Certain adjustments or compromises may still be required to produce the best all-around performance under actual operating conditions. For this reason it is necessary to subject the refrigerating system to extensive performance tests."

### *Solder Capillary to Suction*

In the design of a heat exchanger, he suggested that "a portion of the total length of the capillary used should be soldered directly to the suction line. . . . This will, under certain operating conditions, increase the over-all capacity of the refrigerating system by as much as 35%."

For "the most advantageous heat exchange, the capillary should be soldered to at least a 48-in. length of the suction line," he suggests. Spiralling the capillary around the suc-line could reduce this length of suction line somewhat, but sufficient heat transfer area must be provided.

In this connection Staebler cautioned against flattening the capillary in bending, because this adds further restriction to flow. Spiralling or bending on short radius also tends to restrict flow, he said.

*Table 1—Capillary Tube Length and Bore Using 'Freon-12'*

**(Conditions of Capacity Balance at 86° F. Condensing Temp. with 48 In. of Capillary Bonded to 48 In. of Suction Line for Heat Exchange)**

| Hp. | Lb. 'F-12'/hr. | B.t.u./hr. | Suction Temp., °F. | Capillary Bore, In. | Capillary Length, Ft. |
|---|---|---|---|---|---|
| ⅛ | 27 | 1,650 | 30 | .042 | 4.5 |
| | 18 | 1,200 | 15 | .042 | 9 |
| | 12 | 825 | 0 | .036 | 9 |
| | 8 | 500 | –15 | .031 | 9 |
| ⅕ | 35 | 2,100 | 30 | .055 | 10 |
| | 24 | 1,550 | 15 | .042 | 5.5 |
| | 16 | 1,100 | 0 | .042 | 11 |
| | 11 | 700 | –15 | .036 | 10.5 |
| ¼ | 55 | 3,250 | 30 | .055 | 5 |
| | 39 | 2,300 | 15 | .055 | 9 |
| | 26 | 1,550 | 0 | .042 | 5 |
| | 17 | 1,050 | –15 | .042 | 10 |
| ⅓ | 70 | 4,050 | 30 | .065 | 7.5 |
| | 48 | 3,000 | 15 | .055 | 6 |
| | 32 | 2,150 | 0 | .055 | 11.5 |
| | 21 | 1,400 | –15 | .042 | 7 |

"In general it is extremely undesirable to concentrate all of the capillary at the evaporator and to provide for heat exchange between a conventional liquid line and the suction line. We have sometimes seen a coil of capillary simply substituted for an expansion valve at the evaporator.

"At higher ambient temperatures where operation below capacity balance occurs, a certain amount of uncondensed gas passes through the liquid line to the capillary. Under these conditions the heat exchanger acts as an extension to the condenser and serves only to condense gas passing through the liquid line. Thus no liquid subcooling can take place and as much as 35% of available refrigeration capacity is lost.

"That this condition occurs at the higher ambient temperatures where maximum refrigeration capacity is desired only serves to emphasize the fallacy of such design. Furthermore, such a system is extremely sensitive to refrigerant charge.

### *Effect of Overcharge*

"When operating below capacity balance conditions, a slight overcharge will cause further excessive reduction in available refrigeration capacity due to frostback of the suction line. Inasmuch as the heat exchanger then serves as an extension to the condenser, refrigeration taking place in the suction line is at the expense of refrigerating capacity available to the evaporator."

Proper application of a capillary to a refrigeration system also requires that the high side be of the proper design, Staebler indicated. Because of the unloading characteristics of the capillary whereby it continues to feed refrigerant after the unit cuts off until the pressures between high and low sides are balanced, care must be taken to provide good drainage of the high side.

Trapping of the liquid in the high side under this condition will cause the refrigerant to evaporate in the high side so that gas will pass through the capillary to the low side. This action considerably reduces the efficiency of the system and lengthens the time needed to equalize pressures on the off cycle, thus not permitting easy starting.

Strainers are advisable in the high side just ahead of the capillary entrance to keep out foreign matter. These, however, must be of sufficient area and coarse enough mesh to avoid restricting refrigerant flow while still being effective as strainers.

The conventional liquid receiver usually should be omitted with a capillary, although it can be em-

*(Concluded on next page)*

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### *Chart Shows How to Select Proper Length of Capillary*

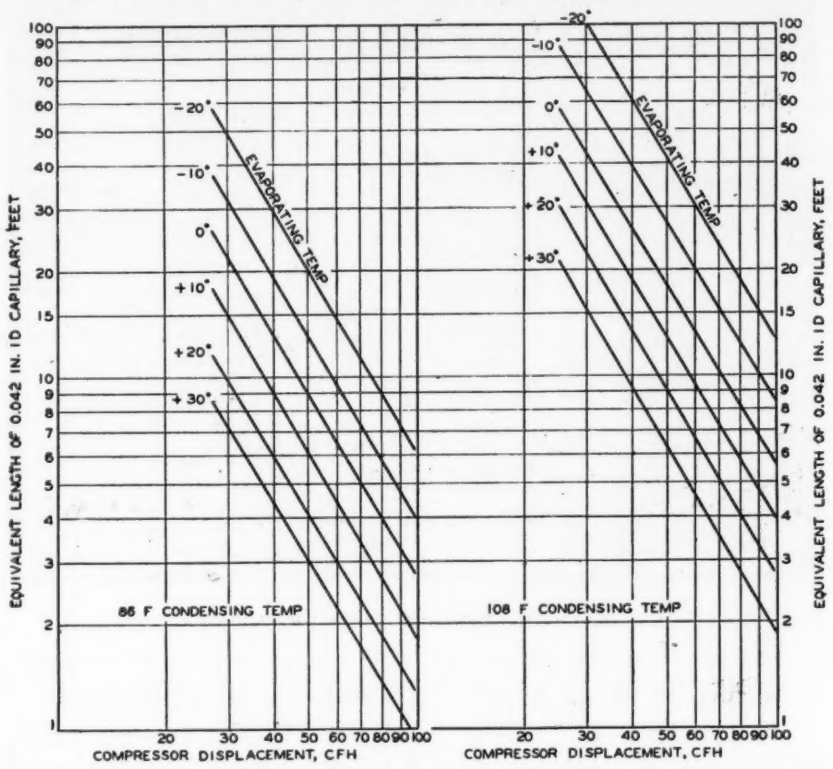



**Fig. 3—This shows the capacity balance of a capillary system for various combinations of compressor displacement and capillary resistance for the conditions indicated above, the curves being based on heat exchange by bonding the capillary to suction line for 48 in. Volumetric efficiency of compressor is taken as 70%.**

# Careful Design Needed for Capillaries

*(Concluded from preceding page)*

ployed under some conditions, Staebler said.

"During certain portions of the operating cycle the compressor may pump more than a capillary can pass. This will result in liquid refrigerant backing up in high side. If a conventional receiver is used, most of the refrigerant will accumulate there, possibly short-charging the low side."

To avoid dangerously high discharge pressures and overloading of the compressor during severe pull-down conditions or in the event of the capillary becoming clogged with dirt or ice due to moisture in the system, it may be desirable to design the high side to hold most or all of the total refrigerant charge.

For this purpose a receiver might be located ahead of the condenser or between sections of the condenser, or a condenser could be provided with sufficient volume to hold the charge, Staebler said.

"Design of the low side is equally important. It should be of the type that will operate satisfactorily on a comparatively small amount of refrigerant, preferably less than 1 lb., in order not to impose excessive loads on the condensing unit during pull-down. This is especially important because of the advisability of operating without a receiver. If the evaporator is of the dry type, a liquid accumulator will usually be required to allow for some variation in refrigerant charge."

Minimum charge and maximum charge tolerance are the main general factors in proper evaporator design, he indicated. The high tolerance factor is especially important if operation in abnormally low ambients is encountered.

Before a capillary is installed by a manufacturer he should inspect it, of course, to see that it meets material specifications, and also be given another pressure drop test, Staebler advises.

There are also certain inspection operations that should be performed on the complete job, he said. These include:

(1) Inspection for correct refrigerant charge.

(2) Unloading time of the high side.

(3) Temperature drop through condenser.

Checking the evaporator for undercharge and frostback of the suction line can usually be done visually.

Unloading time of the high side is especially important if the motor-compressor unit will not start under unbalanced conditions. A long unloading time indicates a liquid trap or restricted capillary, Staebler explained.

As for the temperature drop through the condenser, merely feeling the return bends will give an approximate check as to whether it is operating normally or not, although thermocouples will give a more accurate check. Normally, after superheat is removed from the discharge gas there should be no drop in temperature of the refrigerant through the condenser.

### *Operation Above Balance*

Operation above the capacity balance point maintains the condenser temperature at a point above normal to the liquid back-up-point, after which the refrigerant is subcooled to below normal.

Presence of non-condensibles in the system gradually reduces the refrigerant temperature in the condenser to below normal.

"It is essential that these inspection tests be made with the refrigerating system operating within the design range of high side and low side pressure assumed in the selection of capillary," Staebler cautions.

For selecting a capillary to incorporate in a refrigerating system, Steabler offered considerable data, including some specific information for service replacement of capillaries in the field.

Standard bore capillaries as offered by at least one supplier of capillary tubes come with inside diameters of 0.031, 0.036, 0.042, and 0.055 in.

To achieve the same resistance to flow with capillaries of different bores, it is obvious, said Staebler, that the length must be increased with an increase in bore and vice versa. This relationship can be applied to the various bores of capillaries as follows:

| Bore | Relative Length |
|---|---|
| 0.031 in. | 1.0 |
| 0.036 in. | 2.0 |
| 0.040 in. | 3.2 |
| 0.042 in. | 4.0 |
| 0.049 in. | 8.0 |
| 0.055 in. | 14.0 |

Shown graphically in Fig. 3 are the results of extensive tests conducted by Staebler to determine the capacity balance characteristics of various capillaries with "Freon-12" and hermetic units in the range of ⅛ to ⅓ hp.

The data in the graph is for 0.042 in. bore capillary and shows the equivalent length of this size tube required to obtain the desired capacity balance with compressors in the range of 30 to 100 c.f.m. displacement. Six different evaporting temperatures from -20° to 30° F. are shown for two condensing temperatures, 86° F. and 108° F. The figures are based on the use of approximately 48 in. of heat exchange.

A condensed version of data from Fig. 3 is tabulated in Table 1.

### *Extreme Care Needed*

When the serviceman in the field is installing a capillary, Staebler points out, "it is obvious that extreme care must be taken to insure a dry, clean system.

"The Universal Cooler condensing unit is bone dry and clean when it leaves the factory; however, it will be necessary to make sure that no moisture or dirt enters during the installation and that the rest of the refrigerating system is dry and clean before final assembly to the unit.

"As an additional precaution an approved high side drier incorporating a strainer must be located ahead of the capillary. The use of commercial anti-freeze agent is not recommended and its use will void the warranty.

"All air must be exhausted from the system before the final refrigerant charge is introduced. Inasmuch as the Universal Cooler condensing units contain an 'F-12' holding charge the recommended procedure is to blow the low side and connecting lines free of air with a purge of 'F-12' before connecting to the high side. Then, before final charging, the system should be evacuated through the charging valve.

"If evacuating equipment is not available, the suction line flare connection at the valve should be left loose and the discharge service valve opened to allow the 'F-12' gas charge in the high side to sweep through the lines and low side, purging any remaining air from the system.

"Finally, the system must be charged with the proper amount of refrigerant. Unlike the float valve or expansion valve system which provides for continuous storage of surplus refrigerant in the high side, the capillary system is especially critical as regards refrigerant charge. The best method is to charge refrigerant slowly into the system with the unit running until frost forms on the suction line to a point just beyond the outlet of the evaporator.

"To avoid overcharging of the system, it is important that there be no refrigerant backed up in the high side during the final adjustment of the refrigerant charge. This condition can be determined by noting the temperature difference between the first few and the last few rows of the condenser. If the last few rows are not noticably cooler to the touch you can feel sure that liquid refrigerant is backed up in the condenser, indicating either a restriction or poor selection of the capillary.

"The charge should then be checked later on after the system has cycled to be sure this frost line is being maintained. If the system is overcharged, frost or heavy sweat will form on the suction line beyond this point. If the system is undercharged, frosting of the suction line or evaporator will cease somewhat ahead of that point.

"Another test to check the charge is to shut off the compressor for a few moments until the liquid refrigerant has drained from the high side and has passed out through the capillary to the low side. If the system is properly charged there will be no indications of severe overcharge when the unit is restarted."

### *Heat Exchange Recommended for Capillary Systems*

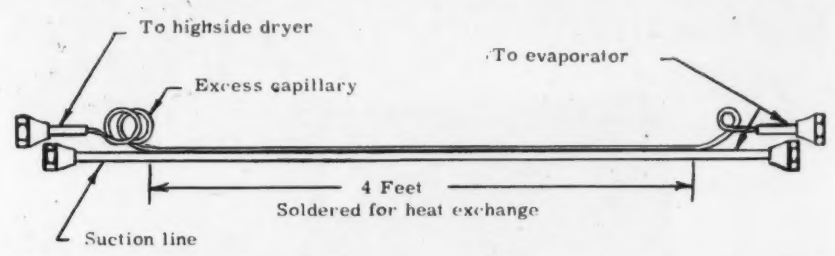



**Fig. 4—Recommended bonding of capillary to suction line for heat exchange is as shown above.**

### *Table 2—Approximate Capillary Tube Data for Service Replacement*

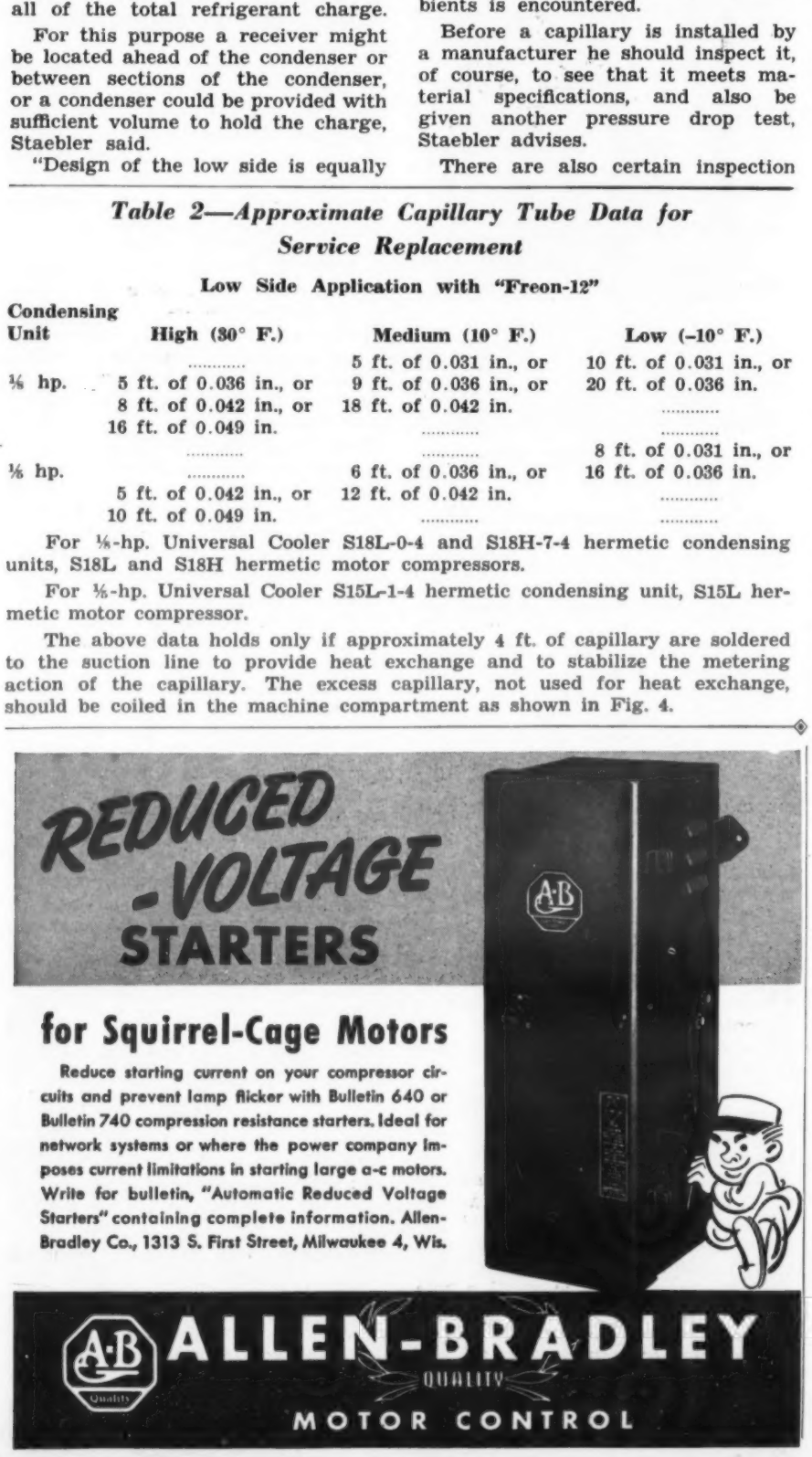
**Low Side Application with "Freon-12"**

| Condensing Unit | High (30° F.) | Medium (10° F.) | Low (-10° F.) |
|---|---|---|---|
| | ..... | 5 ft. of 0.031 in., or | 10 ft. of 0.031 in., or |
| ⅛ hp. | 5 ft. of 0.036 in., or | 9 ft. of 0.036 in., or | 20 ft. of 0.036 in. |
| | 8 ft. of 0.042 in., or | 18 ft. of 0.042 in. | ..... |
| | 16 ft. of 0.049 in. | ..... | ..... |
| | ..... | ..... | 8 ft. of 0.031 in., or |
| ⅙ hp. | ..... | 6 ft. of 0.036 in., or | 16 ft. of 0.036 in. |
| | 5 ft. of 0.042 in., or | 12 ft. of 0.042 in. | ..... |
| | 10 ft. of 0.049 in. | ..... | ..... |

For ⅛-hp. Universal Cooler S18L-0-4 and S18H-7-4 hermetic condensing units, S18L and S18H hermetic motor compressors.

For ⅙-hp. Universal Cooler S15L-1-4 hermetic condensing unit, S15L hermetic motor compressor.

The above data holds only if approximately 4 ft. of capillary are soldered to the suction line to provide heat exchange and to stabilize the metering action of the capillary. The excess capillary, not used for heat exchange, should be coiled in the machine compartment as shown in Fig. 4.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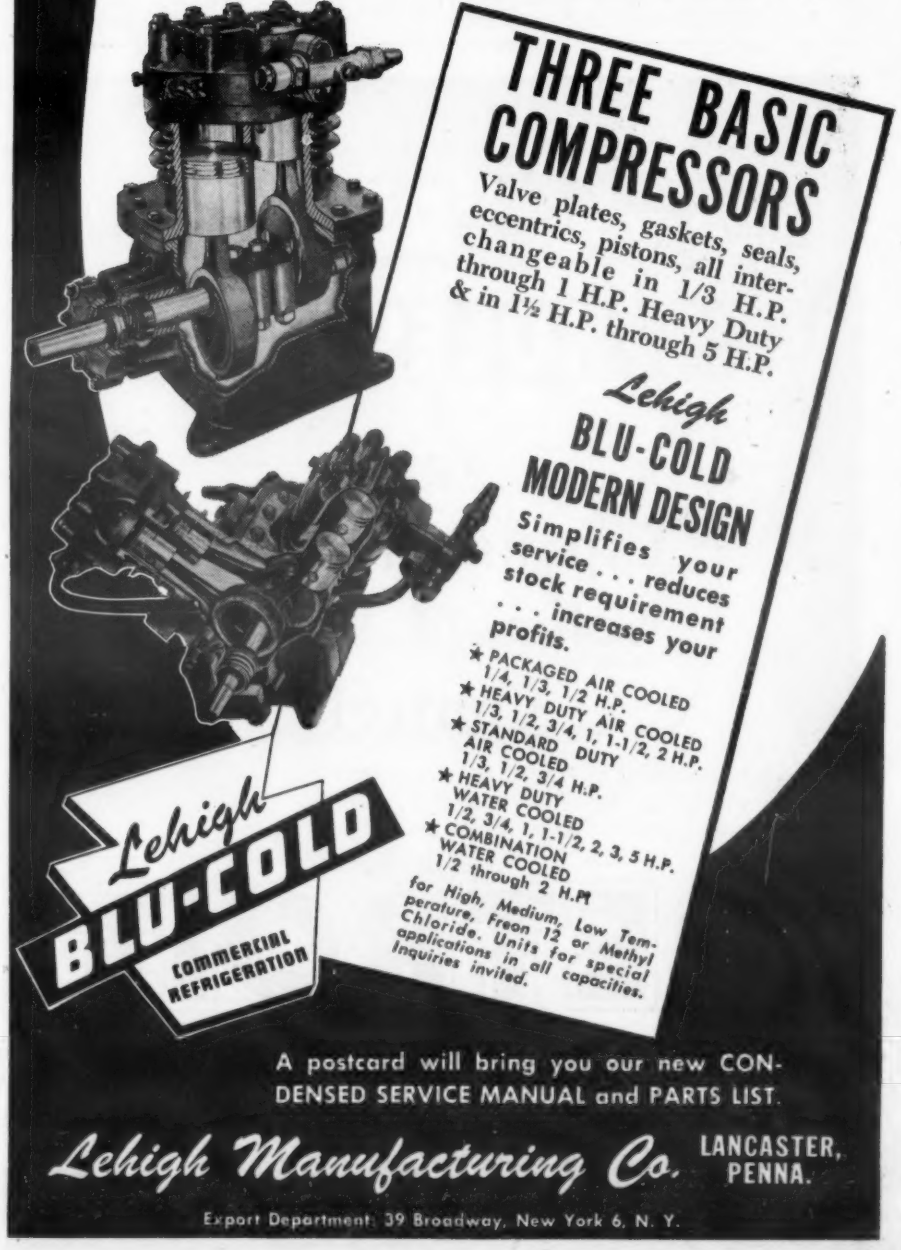
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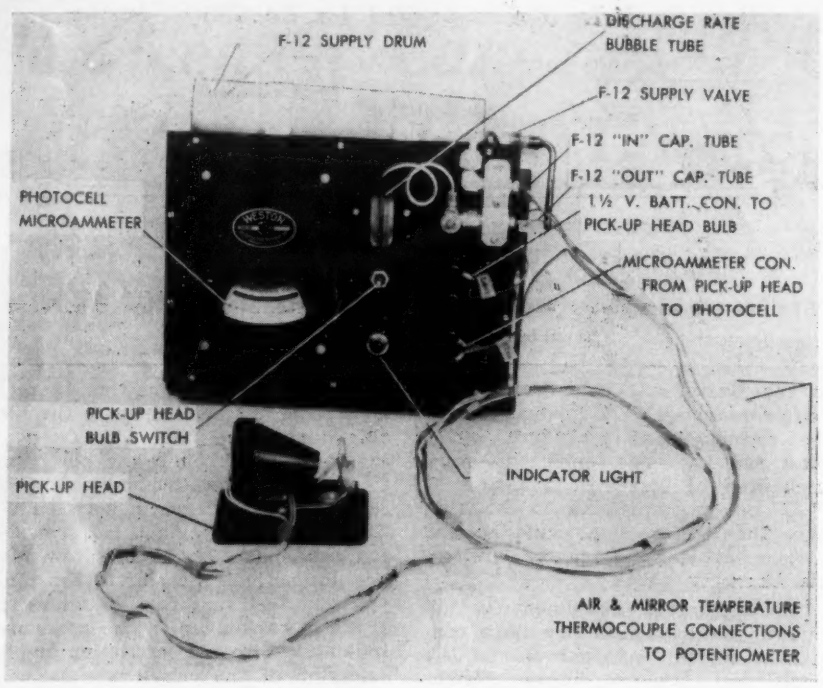
F-12 SUPPLY DRUM
DISCHARGE RATE BUBBLE TUBE
F-12 SUPPLY VALVE
F-12 "IN" CAP. TUBE
F-12 "OUT" CAP. TUBE
1½ V. BATT. CON. TO PICK-UP HEAD BULB
MICROAMMETER CON. FROM PICK-UP HEAD TO PHOTOCELL
PHOTOCELL MICROAMMETER
PICK-UP HEAD BULB SWITCH
PICK-UP HEAD
INDICATOR LIGHT
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Accurate determination of the dewpoint and relative humidity in a household refrigerator is made with this instrument developed by engineers of Crosley. Light reflected from a refrigerated mirror surface into a photo-electric cell shows when moisture condenses on the surface while thermocouples indicate the temperature at the mirror's location.

* * *

## Photo-Electric Cell Aids Crosley Engineers To Find Relative Humidity

WASHINGTON, D. C.—Because of the popularity of high humidity compartments in household refrigerators and the further difficulty of accurately determining the relative humidity in small confined spaces hidden from visual examination, Crosley engineers have developed an electric dewpoint hygrometer, it was revealed at the Domestic Engineeing Conference held in conjunction with the annual meeting here of the American Society of Refrigerating Engineers.

The instrument, which was described by John Cochran of the engineering department of Crosley Div., Avco Mfg. Corp., uses a photo-electric cell to measure the intensity of light reflected from a refrigerated mirror. Formation of moisture on the reflecting surface reduces the intensity of the reflected light beam, which is readily shown on a microammeter.

A temperature reading taken at the reflecting surface when the moisture forms on it gives an accurate determination of dewpoint, from which, with the air temperature known, the relative humidity can be determined, Cochran pointed out.

Two are involved in the instrument: a remote pick-up head placed inside the refrigerator, and the signal detection unit and controls, operated from the outside.

The pick-up head has the photo-electric cell, a low voltage light bulb, a hollow brass mirror with polished chrome reflecting surface and soft copper capillary inlet and outlet tubes, and thermocouples to obtain mirror and air temperatures.

In the signal detection unit there is a direct microammeter for the readings from the photocell, a battery for the light, a "Freon-12" refrigerant supply drum with valve inlet and outlet connections for the mirror, and a discharge rate bubble tube with needle valve on the discharge tube, and thermocouple leads for connection to a potentiometer.

After the proper connections are made, the pick-up head is placed in the refrigerator. When a reading is desired, the light beam is turned on, which will result in deflecting the microammeter. The mirror is then charged with "Freon" by opening the supply drum valve and closing the discharge needle valve.

The supply drum valve is closed after a minute or two and the needle valve opened to start cooling the mirror. When the mirror temperature approaches dewpoint, the discharge should be slowed to maintain a cooling rate of 2° or 3° a minute. At the instant a decided deflection in the microammeter occurs, the mirror temperature represents the dewpoint.

Although Cochran admitted that this instrument lacks the advantages of recording type operation, he said it does give accurate humidity readings within 1% to 2% in the 40°, 80% relative humidity range.

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# Refrigerator Engineering Conference

### *Methods of Checking Inside Conditions Are Cited by Producers*

## Philco 'Gun' Forces Compressed Air Into Cabinet To Test Sealing

WASHINGTON, D. C.—"Perhaps by mutual discussion we can give the public better refrigerators."

Starting with these opening remarks of Chairman George Iwashita of Seeger, engineers from several household refrigerator manufacturers outlined some of their operating and test methods at the first Domestic Refrigerator Engineering Conference ever held by the American Society of Refrigerating Engineers.

Put on in conjunction with the society's recent forty-fourth annual meeting here, the conference crowded so many talks into a four-hour period that the session had to be run off with the split-second precision, almost, of a track meet.

First event featured talks and a demonstration of production line test equipment as used by General Electric and Philco for determining the effectiveness of cabinet sealing to minimize air and moisture infiltration. G-E, it developed, pulls a vacuum on the box while Philco uses compressed air to measure static pressure.

"In any discussion of cabinet sealing, one should first examine how moisture gets through the outer case, and, also, how much can get in," declared Alfred G. Janos of G-E.

Of the several ways moisture can enter, Janos cited the following:

1. Diffusion of vapor through holes in the sheet metal of the cabinet.
2. Breathing, due to:
   (a) Unit cycling.
   (b) Door openings.
   (c) Changes in atmospheric pressure.

Changes in interior temperature and, consequently, vapor pressure, generally average less than ¼° F. due to cycling of the unit, Janos said. Temperature of the storage compartment can vary as much as 2°, while that of the freezer section has been noted to vary as much as 8°, he indicated.

Janos wound up his part of the discussion by presenting a table which showed the amount of moisture that could enter a refrigerator during a year.

| | 90° F., 75% R.H. (Lbs. per Year) | 80° F., 65% R.H. (Lbs. per Year) |
|---|---|---|
| Cycling ..... | 3.44 | 2.61 |
| Door openings ..... | 17.86 | 2.56 |
| Vapor differences .. | .40 | .03 |

Next participant in the conference was Howard Chamberlin of Philco who outlined his company's method of production-line testing for air leakage from cabinets. Philco, he said, forces compressed air into the cabinet from an opening in the rear and then measures the amount of time required to build up 0.2 in. static pressure within the cabinet.

Too long a time interval indicates the cabinet is not tightly enough sealed, and so the box is rejected.

A gun-like nozzle connected to air lines and controls is placed into the rear opening of the cabinet by the operator, who then pulls the trigger. Heart of the system, Chamberlin pointed out, is the Atcotran relay and timer, which indicates by signal light that the static pressure has reached the required level within the proper time limit.

As a safety feature a solenoid is incorporated in the air supply line, which is closed by the relay after a certain length of time has elapsed whether the box passes inspection or not. This is to prevent too high pressure being built up within the cabinet with possible damage to gaskets, etc.

"With this system," said Chamberlin, "there are no border-line cases to worry the operator. The box is either good or it's rejected."

At this point a couple of questions came up.

"Considering the amount of allowable leakage, how many years can you go without trouble?"

Answered Janos: "The absolute amount of the water which comes in isn't so important as the rate. The rate shouldn't be greater than the amount of moisture the evaporator can take out of the air. Also, the rate at which water gets into the insulation may be greater than that at which it can get out. Then the insulation will get wet.

"The problem is really one of directing moisture to the places where water will collect and be removed by defrosting," Janos explained.

Another question: "On a 'cold wall' job what is the relation between fixed limits and maximum vapor?"

And the reply: "We don't really know where to set these limits. They have to be determined by laboratory and field testing."

Russ Ayres of Seeger remarked then that "we prefer the vacuum test because you're working in the same direction as the moisture. Our setup is similar to G-E's."

Discussion as to how small a hole in a cabinet would affect moisture infiltration also led Ayres to comment: "Our tests have showed that an .081 in. hole in the equivalent of a 15-cu. ft. freezer would cause a 2-in. drop in vacuum."

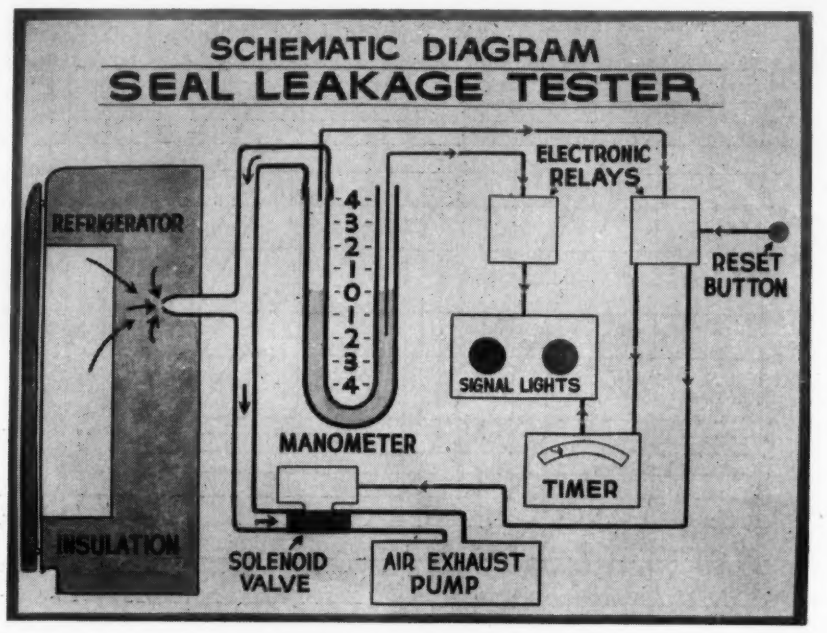



Fig. 1 for General Electric leakage tester.

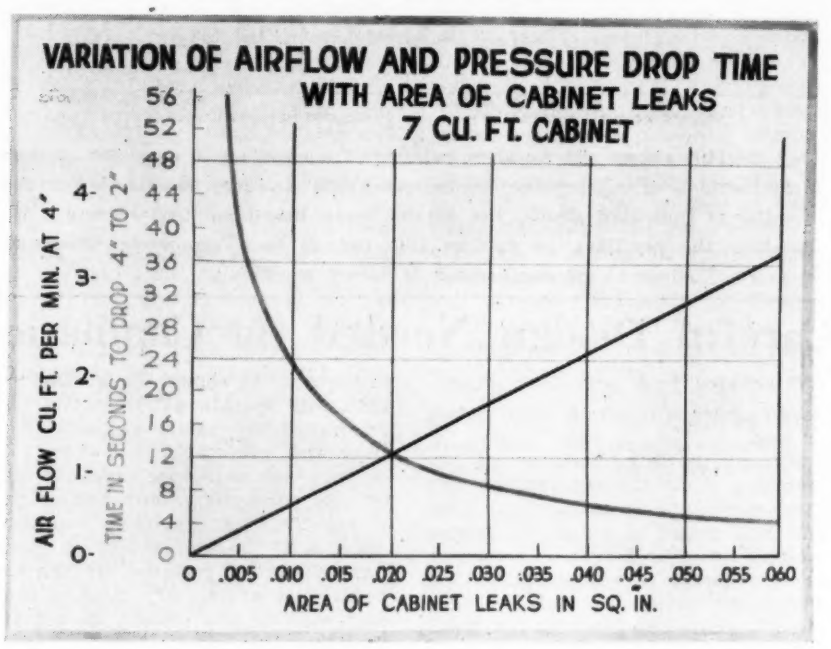
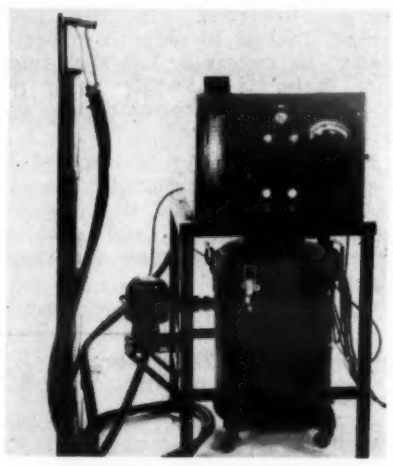

VARIATION OF AIRFLOW AND PRESSURE DROP TIME WITH AREA OF CABINET LEAKS
7 CU. FT. CABINET
AIR FLOW CU. FT. PER MIN. AT 4"
TIME IN SECONDS TO DROP 4" TO 2"
0 1 2 3 4
0 4 8 12 16 20 24 28 32 36 40 44 48 52 56
0 .005 .010 .015 .020 .025 .030 .035 .040 .045 .050 .055 .060
AREA OF CABINET LEAKS IN SQ. IN.

Fig. 2 for General Electric leakage tester.



Leakage tester used by G-E.

* * *

## With G-E System Vacuum Drop In Refrigerator Shows Up on Manometer

WASHINGTON, D. C. — General Electric Co. uses a seal leakage tester on its household refrigerators and home freezers to check on leaks through the outer case, because moisture carried through the outer shell through leaks causes rusting, reduces the insulation factor, and increases in operating costs, it was explained by Charles Harring of the refrigerator quality control division of G-E at Erie, Pa., before the Domestic Refrigerator Engineering Conference.

G-E refrigerators and home freezers are also tested for leaks through the door gasket and sub-assemblies are also checked, but moisture which enters the food compartment in such a manner generally collects on the evaporator, while moisture which enters through the outer cabinet seal can bring about the kind of corrosive action that leads to the deterioration of the cabinet and insulating properties.

The G-E seal leakage tester operates in the manner shown in Fig. 1 for measuring the rate of air transfer through the cabinet walls. The air exhaust (vacuum) pump pulls up to 4 in. of vacuum and the length of time it takes for the manometer to register the drop to 2 in. of vacuum is the essential part of the measuring setup.

Through data developed by test (charted in Fig. 2) it was possible to work out a method whereby a timer, operating through a series of relays, permits an automatic check on whether or not the cabinet seal is satisfactory. A red light flashing within the time limit indicates an unsatisfactorily sealed cabinet.

Prescribed limits will vary according to the size of the cabinet, and are predetermined by test.

To demonstrate the sensitivity of the testing device, Harring removed a ⅛-in. screw from the back of the cabinet used in a test demonstration, and the cabinet which had previously checked okay then showed a failure.

### *Malone, Mfrs'. Agent, Moves*

ST. LOUIS — C. E. Malone Co., manufacturers' representatives, has moved to 4903 Delmar Blvd., St. Louis 8, from its former location at 4900 Washington Blvd. Telephone numbers remain the same—Rosedale 4616 and Forest 9090.

## ASHVE Highlights--

*(Concluded from Page 1, Column 3)*

improved room air conditioners.

There was a large representation of "packaged" type store air conditioners, and in nearly every line noted extensive mechanical and design improvements have been made, not only to provide better performance, but to make them more salable.

There was not a great deal of activity on the "heat pump" front, although Gemco was drawing good-sized crowds for lectures and demonstrations on its "Miracula" self-contained automatically controlled heat pump system.

In the larger systems the Trane Co. was introducing its "Unitrane" system which provides independent room control (described previously in the NEWS) in its exhibit, which seemed to be the largest at the show.

Addition of several new makes of the electronic precipitation style of air filtering and cleaning devices was noted in early tours through the International Amphitheater.

New control developments that will provide closer and more simple control of conditioned air spaces were shown by Automatic Products Co., Penn Electric Switch Co., and Minneapolis-Honeywell.

First two days of the exposition brought out good crowds. The American Society of Heating & Ventilating Engineers convention at the Stevens hotel reported a record registration, with 2,400 registered in on the first two days, highest in the society's history. Technical sessions were concentrated mainly on heating and air distribution problems.

There were two papers, however, of special interest to the air conditioning field. Engineers who have ignored the old "bogy" of physiological shock upon entering or leaving an air conditioned space received support in a report of studies made at the University of Illinois Department of Medicine.

Comparison of the reactions of "healthy young adult males" with those of elderly individuals afflicted with heart disease showed there was no significant difference between the two groups and that the adjustments required placed no strain on the body.

Stressing the need for a more accurate and uniform method of estimating the load of an air conditioned space and selecting equipment, Carl M. Ashley, chief development engineer of Carrier Corp. described the method he had been using for 15 years and compared it with several others.

Next Heating & Ventilating Exposition will be held in Dallas, Tex., in January of 1950. The 1949 mid-year meeting of the ASHVE will be held in Minneapolis.

## NRDGA Announces Result Of Election of Officers

NEW YORK CITY—New officers recently elected by the National Retail Dry Goods Association include Charles G. Nichols, G. M. McKelvey Co., Youngstown, Ohio, chairman of the board of directors; George Hansen, Chandler & Co., Boston, chairman of the executive committee; and Lew Hahn, president and treasurer.

Elected vice chairmen of the board of directors were Carl N. Schmalz, R. H. Stearns Co., Boston—New England; Irwin D. Wolf, Kaufmann Dept. Stores, Pittsburgh—Mid-Atlantic states; David Ovens, J. B. Ivey & Co., Charlotte—Southern states; Ralph T. Friedmann, Ed. Schuster & Co., Inc., Milwaukee—Midwestern states; Ira K. Young, Crews-Beggs Dry Goods Co., Pueblo, Colo.—Western states; and Gary Y. Vandever, Vandever Dry Goods Co., Inc., Tulsa—South central states.

## No Steps from Refrigerator to 'Range'

General Air Conditioning's new combination refrigerator and cooking unit is said to occupy floor space measuring only 27½ x 21½ inches. Refrigeration capacity is given as 4 cu. ft.

* * *

## General Air Conditioning Makes Combination Unit

LOS ANGELES—General Air Conditioning Corp. here has announced that it is now in volume production on a combination cooking unit and refrigerator for use in small homes and apartments, offices, hotels, institutions, motels, and resort cabins.

Models are available with either a two-unit electric "range," or a four-burner gas "range," combined with a 4-cu. ft. electric refrigerator.

The electric stove is a 220-volt, heavy-duty range approved by Underwriters Laboratories, according to the manufacturer. Top of the range is removable for cleaning.

The gas range, approved by the American Gas Association, is equipped with heavy-duty burners and newly-designed non-tilt grates. The stove top and the burners themselves can be removed for cleaning.

"Due to triple insulation, the heat of the ranges does not affect the temperature of the refrigerator," the company said.

The refrigerator, which was introduced earlier by the company, carries U. L. approval and is powered by a hermetically-sealed Tecumseh unit. It is insulated with fiberglass and equipped with triple chrome plated hardware. Its temperature control offers seven settings.

The complete cooking and food storage unit reportedly occupies 27½ by 21½ in. of floor space.

W. H. Laband, General's president, pointed out that the company will continue to manufacture the General refrigerator in addition to the two combination units.

## Koch Leases More Space For Refrigerator Output

NORTH KANSAS CITY, Mo.—Koch Refrigerator Co. has leased 20,000 sq. ft. in a warehouse across the street from its headquarters here and intends to devote 80% of the space to the manufacture of refrigerators.

The new quarters are to be known as Plant No. 3, the company said. The remaining 20% of the space will be used as a display room for the firm's packing house machinery.

Millard Mayer, Koch president, said that his company plans to hire about 50 more persons to work in the new plant located at 14th and Gentry Sts.

The floor space leased by Koch amounts to one-sixth of the total space in the warehouse.

## N. Y. Dealer Association Installs New Officers

ALBANY, N. Y.—Thomas Dorado was installed as president of the Capital District Appliance Dealer's Association at a dinner meeting which was held in Kenmore hotel, recently. He succeeded Bernard N. Silberg.

Other officers installed were: vice president, Harold Danielson; secretary, Hugo Rausch; and treasurer, James Albertine, an announcement by the group indicates.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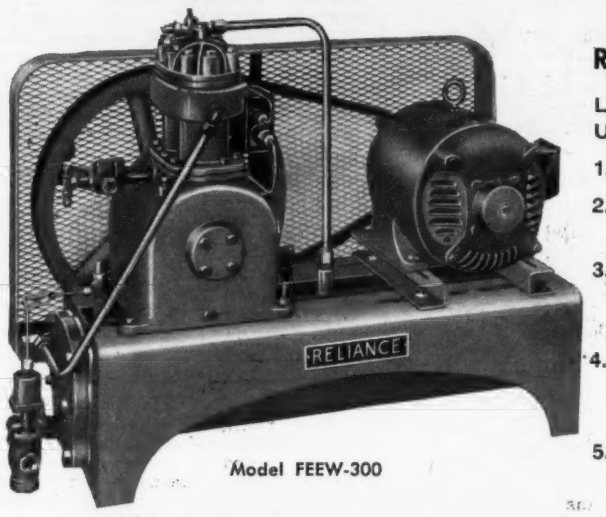


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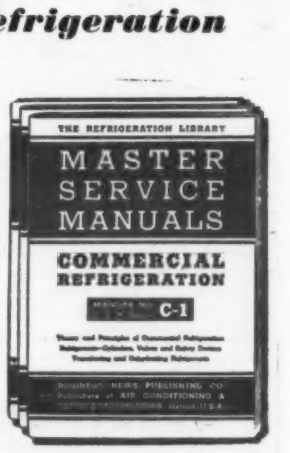


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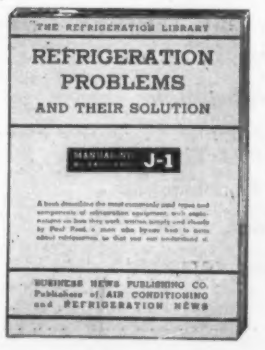


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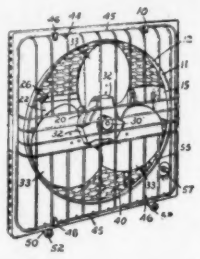
# PATENTS

## Week of November 2

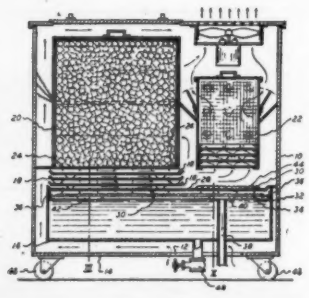
## (Continued)

**2,453,009. VENTILATING DEVICE. Karl M. Ganger and John B. Burrowes, Dayton, Ohio, assignors to The Lau Blower Co., Dayton, Ohio, a corporation of Ohio. Application March 10, 1947, Serial No. 733,494. 10 Claims. (Cl. 230—259.)**



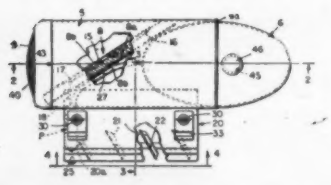
1. A portable ventilating fan of the character described comprising a main panel having a central opening, a relatively narrow supplemental panel overlying said opening, means securing said supplemental panel to said main panel in spaced and parallel relation, a motor having a shaft, fan blades on said shaft of said motor, means mounting said motor on said supplemental panel with said fan blades positioned substantially centrally of said opening in said main panel, and means connected with both of said panels and constructed both to form supporting legs for said fan and to brace said panels relative to each other.

**2,453,017. ICE AIR COOLING APPARATUS HAVING ANTISPLASH MEANS. Hiram Joseph Kaufman, Detroit, Mich. Original application Feb. 23, 1942, Serial No. 432,014. Divided and this application Oct. 26, 1945, Serial No. 624,800. 3 Claims. (Cl. 62—133.)**



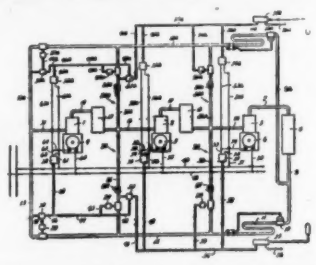
1. An air conditioning apparatus of portable construction and adapted to be moved about while in service, comprising an air conditioning unit, a waste tank supported at a unit in the apparatus and movable therewith, a discharge for waste liquid flowing by gravity from said air conditioning unit, an intake in said tank for waste liquid from said discharge, and an antisplash and silencing means located in said tank in vertical alignment with said discharge and said intake to silence the liquid discharged in said tank and to minimize splashing of waste liquid in said tank outwardly through such intake, against the normal flow of discharge liquid, upon movement of said apparatus in service.

**2,453,018. CAR COOLER. James E. Kercheval, San Gabriel, Calif., assignor to General Air Conditioning Corp., Los Angeles, Calif., a corporation of California. Application March 22, 1948, Serial No. 16,159. 4 Claims. (Cl. 261—34.)**



1. In a car cooler, a tubular casing having an air inlet in its front end, a rectangular air outlet neck projecting laterally from its side and a closed water tank at its rear end, a humidifying pad stationarily mounted in the casing between the inlet and outlet neck, manually actuated pressure generating means mounted in the neck for withdrawing water from the tank and forcing it under pressure onto the humidifying pad, and means for mounting the casing on a car with its inlet facing the direction of travel of the car and with its outlet neck projecting into the car through a window thereof; said cooler being further characterized by the pressure generating means having a manually operated acuating member projecting from the discharge end of the outlet neck in position to be accessible to an occupant of the car.

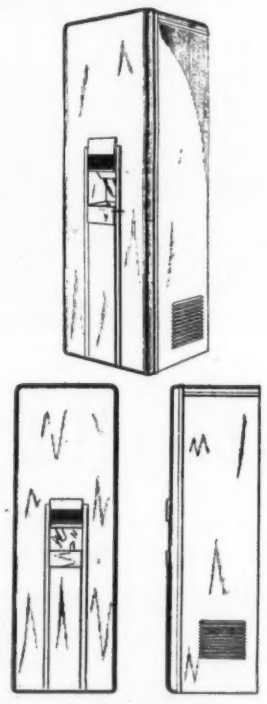
**2,453,095. PLURAL STAGE REFRIGERATION SYSTEM AND CONTROL THEREFOR. William L. McGrath, Philadelphia, Pa., assignor to Minneapolis-Honeywell Regulator Co., Minneapolis, Minn., a corporation of Delaware. Application July 19, 1943, Serial No. 495,246. 20 Claims. (Cl. 62—115.)**



1. In a refrigerator system, first and second compressors, means connecting the discharge means of the first compressor with the suction means of the second, conduit means connecting the discharge means of the second compressor to a condenser, expansion valve and an evaporator, main suction means connecting the outlet of the evaporator to the suction means of the first compressor; by-pass means including a throttling valve connected between the main suction means and the means connecting the discharge means of the first compressor and the suction of the second compressor; control means for starting the second compressor, upon an initial demand for refrigeration, and for opening said throttling valve increasingly as the demand upon the second compressor increases, said control means starting said first compressor when the load demand exceeds the capacity of the second compressor, and means restricting return flow through said by-pass means toward said main suction means.

### DESIGNS

**151,650. DESIGN FOR A BEVERAGE DISPENSER. Anthony Naiden, Southwick, Mass., assignor, by mesne assignments, to The Coca-Cola Co., Wilmington, Del., a corporation of Delaware. Application Jan. 31, 1947, Serial No. 136,577. Term of patent 14 years. (Cl. D52—3.)**

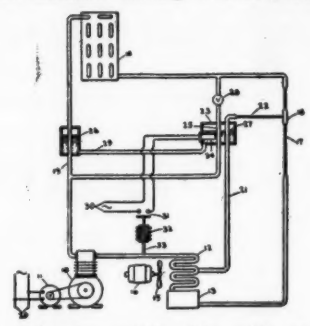


The ornamental design for a beverage dispenser, substantially as shown.

## Week of November 9

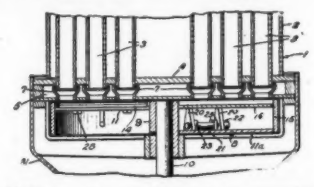
**2,453,131. REFRIGERATING SYSTEM. Albert B. Hubbard, Caldwell, N. J., assignor to General Electric Co., a corporation of New York.**

1. A refrigerating system including a compressor and a condenser and an evaporator connected in a closed refrigerant circuit, a flow restricting tube connected in said circuit between said condenser and said evaporator to control the flow of liquid refrigerant to said evaporator, a by-pass conduit connected between said condenser and said tube intermediate the ends of said tube, means providing a closed chamber having a first portion in



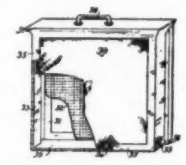
heat exchange relationship with said by-pass and containing a body of volatile liquid, means for heating said portion of said chamber to vaporize liquid and force liquid out of said portion of said chamber into second portion thereof, means utilizing refrigerant withdrawn from said evaporator for cooling said second portion of said chamber to condense vapor therein, and means responsive to a condition of operation of said system for energizing said heating means to control the flow of refrigerant through said by-pass for varying the rate of flow of refrigerant to said evaporator.

**2,453,140. ADJUSTABLE CUTTER FOR TUBE-ICE MACHINES. Benjamin F. Kubaugh, Louisville, Ky., assignor to Henry Vogt Machine Co., Inc., Louisville, Ky., a corporation of Kentucky.**



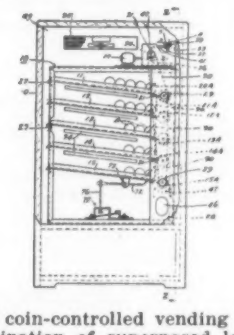
1. Rotary ice cutter for severing the lower end portions of a plurality of freely descendable laterally immovable parallel ice cylinders, comprising a partition having a radial slot and having ice cylinder supporting portions at two levels, terminating in the respective edges of said slot, a knife secured to the higher edge comprising a reversible blade having its opposite edges respectively sharp and blunt, and a handle secured to said blade extending downwardly through an aperture in the portion of said disk at higher level for rotating said blade to bring either of its edges into active position.

**2,453,206. AIR FILTER. John F. Donat, Euclid, Ohio.**



1. In a conduit, an air cleaner, comprising in combination, a sheet metal receptacle member interposed in the conduit, the said receptacle member having spaced wall portions extending crosswise of the aforesaid conduit, an opening in one end thereof and an offset groove in the side wall thereof, and a sheet metal filter member removably mounted in the receptacle member having a coarse screen and a fine mesh mounted on spaced frame portions thereof and a closure portion for the aforesaid opening, the said frame portion being between the said wall portions and the screen and mesh thereon being interposed in the column of air in the aforesaid conduit, the said frame portions including side walls having an offset tongue thereon engageable with the aforesaid offset groove, whereby the filter member can be inserted into the receptacle member in only one position wherein the said screen faces the conduit port and the said mesh faces the conduit vent.

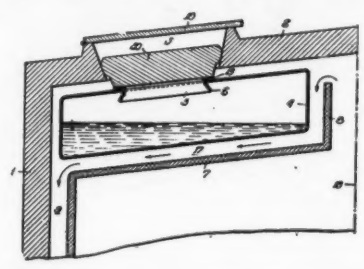
**2,453,280. COIN CONTROLLED VENDING MACHINE. Wilson Marks Stewart, Ottawa, Ontario, Canada.**



4. In a coin-controlled vending machine, the combination of superposed lower and upper trays forming supports for bottles lying transversely on their sides, said upper tray being movable above said lower tray, semi-cylindrical members associated with said trays, respectively, operable to deliver bottles, each of said members being adapted when in a certain rotary position and empty, to receive a bottle from its associated tray, said upper tray having means adapted to form a stop for a bottle on said lower tray when said upper tray is loaded thereby preventing the bottle from being received into the member associated with said lower tray, and means for moving said upper tray to cause said stop to clear the bottle on said lower tray when said upper tray is unloaded.

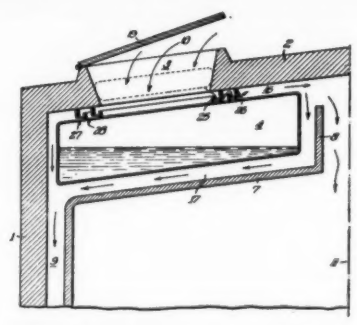
**2,453,294. HATCH PLUG FOR CLOSING OPENINGS IN ICE CONTAINERS OF REFRIGERATOR CARS. Edwin R. Battley and George E. McCoy, Montreal, Quebec, Canada.**

1. In a refrigerator car having a hatch opening with tapering sides in the roof thereof, a refrigerant container spaced below said roof so as to provide a space between said roof and said container which communicates with the hatch opening and the interior of the car for ventilating purposes, said container having a filling opening therein registering with



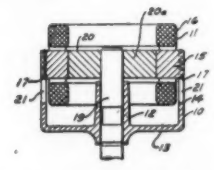
said hatch opening, and a removable hatch plug having portions engageable with the walls of the hatch opening to close the hatch opening to retard heat infiltration and other portions engageable with the container to simultaneously close the filling opening to retard the escape of refrigerant from the container.

**2,453,295. ICE CONTAINER FOR REFRIGERATOR CARS. Edwin R. Battley and George E. McCoy, Montreal, Quebec, Canada.**



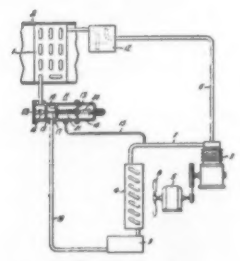
1. In a refrigerator car having a hatch opening in the roof thereof, a refrigerant container spaced below said roof so as to provide a space between the roof and the container which communicates with the hatch opening and the interior of the car for ventilation, said container having a filling opening registering with the hatch opening, a plurality of spaced vanes depending from said roof in overlapping and spaced relation with a plurality of spaced upstanding vanes on the container around the perimeter of the filling opening, whereby air entering the hatch opening may pass between said vanes into the interior of the car, and drain holes in the container and adjacent said upstanding vane so that liquid surging from the container is baffled by said depending vane and drained into the container.

**2,453,297. COMPRESSOR MOTOR AND METHOD OF MAKING SAME. Ralph L. Benson, Greenville, Mich., assignor, by mesne assignments, to Gibson Refrigerator Co., Greenville, Mich., a corporation of Michigan.**



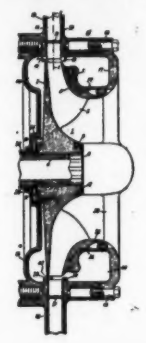
1. The method of manufacturing motors which comprises providing a frame having a journal bearing with an accurately dimensioned inner surface, providing a stator having a metallic core with an accurately dimensioned annular inner surface, positioning said parts with an external surface of the stator in juxtaposed relation to an external surface of the frame throughout a substantial portion of the perimeters of said parts, arranging and maintaining said parts with the annular inner surface of the core in coaxial relation to the inner surface of the journal bearing solely by accurately dimensioned gauge means engaging said inner surfaces, fixedly connecting said external surface of the stator to said external surface of the frame while holding said parts in said juxtaposed relation and while the said inner surfaces of the journal bearing and the core are maintained in coaxial relation by said gauge means, and thereafter removing at least that portion of the gauge means engaging the inner surface of the core.

**2,453,439. REFRIGERATION CONTROL SYSTEM. Albert B. Hubbard, Caldwell, N. J., assignor to General Electric Co., a corporation of New York.**



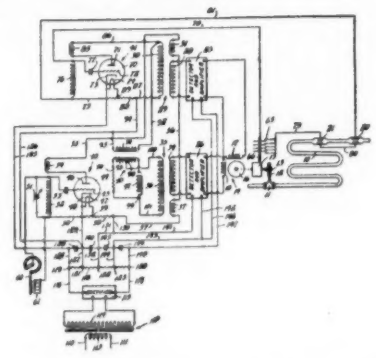
1. A refrigerating system comprising a compressor and a condenser and an evaporator arranged in a closed refrigerant circuit, a motor for driving said compressor, a variable flow controlling device arranged in said circuit between said condenser and said evaporator and constituting the sole refrigerant flow controlling device in said system, and means responsive directly and substantially solely to a condition of operation on the high pressure side of said system for actuating said device automatically to control the flow of refrigerant to said evaporator and for maintaining the load on said motor substantially constant throughout each operating period thereof, said means constituting the sole means for actuating said device automatically.

**2,453,524. CENTRIFUGAL COMPRESSOR. Kenton D. McMahan, Scotia, and Neil P. Bailey, Troy, N. Y., assignors to General Electric Co., a corporation of New York.**



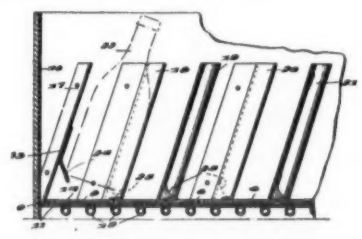
1. In a centrifugal compressor, the combination of an impeller having a web defining one side of the impeller passages, a shroud defining the opposite side of the impeller passages, both web and shroud having substantially parallel outer circumferential edge portions, a diffuser surrounding the impeller having at least one expanding diffusing passage and an inner circumferential edge portion arranged to form a close clearance with one of said outer circumferential edge portions, a casing surrounding the impeller and defining an annular surge chamber adjacent the clearance space between impeller exit and diffuser inlet, the inner circumferential edge portion of the diffuser being shaped to define a pressure relief passage communicating between the surge chamber and the clearance space between impeller and diffuser at the high pressure side of the diffusing passage inlet.

**2,453,584. REFRIGERATING CONTROL APPARATUS. Alwin B. Newton, Dayton, Ohio, assignor to Minneapolis-Honeywell Regulator Co., Minneapolis, Minn., a corporation of Delaware.**



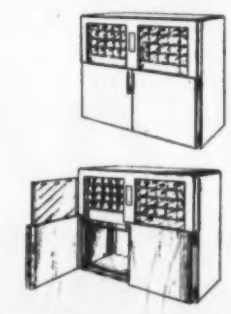
1. Control means for a refrigerating system of the sort wherein refrigerant is circulated through an evaporator including; valve means for controlling the flow of refrigerant through such an evaporator, reversible motor means for operating said valve means, said motor means being variable in speed, means for responding to the electrical impedance value of the refrigerant at the outlet of the evaporator, and means including said responsive means for controlling said motor means to move said valve means toward closed position upon an increase of said value and to move said valve means toward open position upon a decrease of said value, the speed of operation of said motor means being dependent upon the variation of said impedance from a predetermined quantity.

**2,453,667. APPARATUS FOR COOLING BOTTLED BEVERAGES. Francis M. Lambert, Narberth, Pa., assignor to Heintz Mfg. Co., Philadelphia, Pa., a corporation of Pennsylvania.**



1. Bottle retaining means for refrigerated beverage bottle coolers and the like comprising a plurality of retainer members adapted to be disposed in spaced parallel relationship within the cooling compartment of the cooler, each of said retainer members being inclined upwardly at an angle from the vertical, said retainer members each being formed with a plurality of curved portions the concave faces of which face upwardly and are complementary in contour to the side wall of a bottle and provides supporting surfaces for contact with a substantial wall area of each bottle, said curved portions of adjacent retainer members being staggered with respect to each other, each retainer member having an inclined surface on its rear side at the base opposite the concave face of the adjacent retainer member, so that when a bottle is disposed between the retainer members said inclined surface will urge the bottle into intimate contact with the concave face of the retainer member opposite it, each of said retainer members having an integral enlarged flat surfaced base portion providing support for said retainer members.

**151,681. DESIGN FOR A SELF-SERVICE REFRIGERATED DISPLAY CASE. Edward P. Brill, Milwaukee, Wis.**



The ornamental design for a self-service refrigerated display case, substantially as shown.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1-31-49

## Gov't Manual Issued on Mineral Wool Insulation

WASHINGTON, D. C.—The Commodity Standards Div. of the National Bureau of Standards has announced that printed copies of Commercial Standard CS105-48 covering Mineral Wool Insulation for Low Temperatures (Second Edition), are now available.

This standard covers minimum physical and chemical requirements of mineral wool in loose, granulated, felt, industrial batt, and board or block forms.

It includes thicknesses of insulation required for various operating temperatures, specifications for auxiliary materials, tests, installation requirements, and method of guaranteeing compliance with the standard.

The booklet also includes a brief history of this standardization project, a list of the acceptors, and the membership of the standing committee, the chief function of which will be to consider revisions of the standard to keep it abreast of progress in the industry.

Printed copies of CS105-48 may be obtained from the Superintendent of Documents, Government Printing Office, Washington 25, D. C., for 10 cents per copy. A discount of 25% will be allowed on orders for 100 or more copies sent to a single address.

## *Philadelphia Electrical Group Re-elects Officers*

PHILADELPHIA — The complete slate of officers of the Electrical Association of Philadelphia was re-elected recently by the board of governors.

The slate includes: Henry B. Bryans, president of the Philadelphia Electric Co., president; E. W. Loomis, district manager of the Westinghouse Electric Corp., vice president; Phillip H. Ward, Jr., president of the Ward Electric Co., treasurer; and Robert J. Moran, chief of the electrical district, Middle Department Rating Association, secretary.

**INTERESTED IN MANUFACTURING COILS?**

**Manufacturer has coil assembly machines available on exclusive franchise basis. Ties in with nationally known complete line of low sides. Engineering, technical know-how, materials, catalog, all furnished. Nominal investment required. Exceptional opportunity.**

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2100 Indiana Ave. • Chicago 16, Illinois

Canada—2025 Addington Ave., Montreal

## *Success of Display Cases Convinces Delicatessen To Go Self-Serve*

ROCHESTER, N. Y.—A new self-service delicatessen, located in the center of Wegmans Food Market at 409 Ridge Road here and equipped with 74 ft. of refrigerated display cases, has brought a "very sizeable increase in volume" to the store, an official of the firm stated recently.

This is the food chain's first venture into complete self-service in any department other than grocery.

"Items which were impossible to sell under the conventional service method have proved to be rapid turnover merchandise, while such staple items as milk, butter, eggs, and oleo also have enjoyed a tremendous increase in volume," the official declared.

Reported to be the largest, best-stocked supermarket delicatessen in Rochester, it consists of 30 ft. of double-deck cases devoted to cheese, butter, eggs, and oleo, and 44 ft. of single deck cases devoted to cold cuts, sausage, bulk pickles, salads, baked beans, and other related items.

Customers may serve themselves from either side of this two-aisle delicatessen setup. All slicing of cold cuts and cutting of cheese, as well as packaging of these items, is done in an area between the two rows of cases. This area is roughly 7 ft. wide, and 30 ft. long.

While it is traditional to locate the dairy department along a wall, necessity forced a center location for this delicatessen section. Results have been most satisfactory.

Wegmans Super Markets proposes to change over all departments, excepting bakery, to self-service, as rapidly as practical, the company official said.

## Refrigerators, Washers Prove To Be Only Gainers In Knoxville Sales Area

KNOXVILLE, Tenn. — Sales of major appliances during November by local dealers were off about 30% from November, 1947 and, with the exception of refrigerators and washing machines, were considerably below October, statistics released by the Knoxville Utilities Board have revealed.

With 30 dealers reporting in November as compared with 23 in October, refrigerators picked up 11 units over October while washing machines rose by 40 units.

Even with the greater number of dealers reporting, sales of all other major appliances except home freezers showed unit volume drops from October. Home freezer sales remained at three units for each month.

Total unit sales and dollar value for November was as follows:

| | No. of Units | Value |
|---|---|---|
| Home Freezers | 3 | $ 1,005 |
| Refrigerators | 163 | 41,565 |
| Ranges | 122 | 33,115 |
| Water Heaters | 42 | 5,235 |
| Dishwashers | 3 | 1,150 |
| Waste Disposal Units | 3 | 375 |
| Washing Machines | 144 | 23,121 |
| Ironers | 9 | 1,479 |

This report is compiled from 30 dealers.

## *Electromaster Reports Sales of $4,810,346 for 10-Months*

DETROIT—Electromaster Inc. here has reported for the first 10 months of 1948, it had earned a net profit of $57,600 on net sales totalling $4,810,346.

For the full year, 1947, the company had reported a net income of $289,298 on net sales amounting to $6,185,439.

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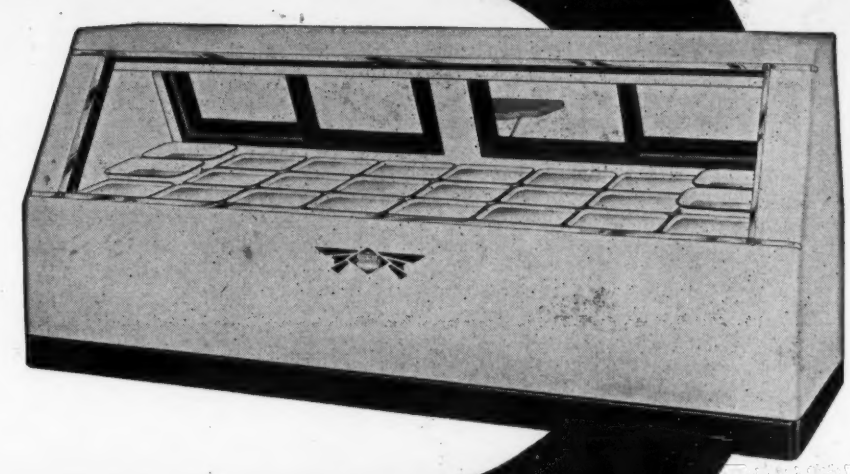
**Incorporating the following features:**

**Rust-proof Stainless Steel and Aluminum Interiors—Silver Soldered Peerless Fin Coils—Blower Type—Sliding Hard Rubber Doors—Heavy Sealed Insulation.**

**IMMEDIATE DELIVERY IN 4, 6, and 8 FOOT LENGTHS IN BOTH REMOTE AND SELF-CONTAINED MODELS.**

Write or Wire — **ROYAL COOLER COMPANY** BREESE, ILLINOIS — Telephone 140

**EYE CATCHER**



Outstanding in the display case field, the SHERER Model 500 offers food merchants—

**WORKABILITY**—easy to work out of

**VISIBILITY**—customer sees all the display

**CAPACITY**—3 platters deep on one shelf

**BEAUTY**—gracefully rounded contours

It has everything expected in a good meat case.

**SHERER** REFRIGERATED MERCHANDISERS

**SHERER-GILLETT CO., MARSHALL, MICHIGAN**

# CLASSIFIED ADVERTISING

RATES for "Positions Wanted" $2.50 per insertion 50 words or under. 5¢ ea. additional word.

RATES for all other classifications $5.00 per insertion 50 words or under. 10¢ ea. additional word.

ADVERTISEMENTS set in usual classified style. Box addresses count as five words, other addresses by actual word count. Please send payment with order.

### POSITIONS WANTED

WEST COAST sales representative now available to manufacturer of quality refrigerated cabinets or equipment on full-time basis. Broad, seasoned and successful experience in all departments of profitable sales volume through well established distributors and dealers in California, Arizona and Nevada. E. W. JONES, 800 Florecita Terrace, Altadena (Pasadena), California.

DO YOU have a help problem? Let us solve yours. Available—well trained selective men. These men have completed a course of 34 weeks consisting of practical shop refrigeration. Send for our records. Well trained men for a good job. Available for all parts of the country. THE ST. LOUIS SCHOOL FOR ELECTRICITY & REFRIGERATION, INC., 6767 Southwest Ave., St. Louis 17, Mo.

EXECUTIVE ENGINEER: twelve years experience in field of refrigeration and air conditioning. Proven ability in organization and administration. Able to inspire loyalty and co-operation. Desires to apply technical background to broader field than strictly technical. University engineering graduate—age 38. BOX 3070, Air Conditioning & Refrigeration News.

SALES ENGINEER—in the refrigeration industry over 20 years—45 years old—experienced in sales engineering as well as practical service problems. Capable of handling small or large commercial refrigeration and air conditioning. Hold executive position in the north at present and desire to make change to southeast or southwest. Can furnish excellent references as to ability and character. Available March or April. BOX 3081, Air Conditioning & Refrigeration News.

REFRIGERATION AND air conditioning engineer desires to locate with reliable manufacturer. Offers exceptional record of loyalty and proven ability. Willing to travel. Broad experience makes up for lack of engineering degree. Complete details and references given on request. Welcome personal interview. BOX 3084, Air Conditioning & Refrigeration News.

QUALIFIED WITH 8 yrs. service experience all types refrigeration, air conditioning, oil, hot air, and steam heating equipment. 1 yr. sales engineer air conditioning; 1½ yrs. as instructor in leading refrigeration school. Prefer instructor position. Will correspond on your requirements. BOX 3086, Air Conditioning & Refrigeration News.

I WOULD like to be trained by a domestic or commercial refrigeration manufacturer or corporation, in this product, and serve them as a field service representative or serviceman to their distributors and dealers. I am 25 years old, a graduate of a highly accredited refrigeration school, 4 years factory and service work experience. BOX 3088, Air Conditioning & Refrigeration News.

REFRIGERATION ENGINEER draftsman has three years experience in refrigeration and air conditioning installations, such as locker plants, abattiors, packing houses, etc. Desires position in Los Angeles, Long Beach area. Qualified to engineer and lay out complete installations from sketches to working drawings. Some service and sales experience. Permanent, conscientious. BOX 3089, Air Conditioning & Refrigeration News.

EXPERIENCED REFRIGERATION man on open and sealed units, some commercial, washing machines fully automatic and others. Many years of experience. Also experienced on sales on these items. Would like to get a position as a salesman or serviceman or both with a factory of this kind. Can give good reference. Write to BOX 3090, Air Conditioning & Refrigeration News.

### POSITIONS AVAILABLE

ASSISTANT BRANCH manager needed for wholesale refrigeration supplies warehouse. Must have refrigeration engineering experience. Good salary, profit sharing plan, ideal conditions. Replies must contain complete personal information. Write to: F. H. LANGSENKAMP COMPANY, 229 E. South Street, Indianapolis 4, Indiana.

MANUFACTURERS' REPRESENTATIVES: wanted by manufacturer of replacement refrigeration parts. These parts are unique in design, having features desired by the serviceman, priced to sell. If you contact parts jobbers write for particulars. LINCOLN APPLIANCE CO., 1827 So. Bronson, Los Angeles 6, California.

OPPORTUNITY FOR dairy equipment salesmen calling on refrigeration dealers. We need representatives in several territories. Agent should have kindred but not competitive lines. Product—outstanding packaged aerator milk cooler for farm use. In first letter give references and territory now traveling. STAR PUMP & COOLER CORPORATION, 1218-24 N. 15th St., St. Louis 6, Mo.

EXPERIENCED MAN: due to expansion program, we are interested in a man to teach in large G.I. approved and state accredited refrigeration and air conditioning school. Teaching experience preferred but not necessary. Full time job. Salary and opportunity above average. When applying state qualifications. Write: UNIVERSAL TRADES SCHOOL, 3600 No. 24th St., Omaha 10, Nebraska.

LARGE MANUFACTURER, expanding field organization has openings for experienced field sales personnel promoting sales of small condensing units through distributors and jobbers. Also needs men to handle distributors' sales of self-contained commercial refrigeration equipment including water coolers. Salary commensurate with experience and ability. Give complete details, record of past earnings, and state territorial preference. Write BOX 3072, Air Conditioning & Refrigeration News.

WANTED ENGINEER. Old and well established distributor contractor handling nationally known and well advertised equipment, within an hour from New York City, wants a thoroughly experienced air conditioning and refrigeration sales engineer. Must supervise sales force and be capable of handling all sizes of air conditioning and refrigeration up to 50 tons. Salary and override on volume business. Permanent position to man of proven ability. Opportunity to invest in business. Applications will not be considered unless showing fifteen to twenty years field experience. BOX 3087, Air Conditioning & Refrigeration News.

ENGINEERS — COMPRESSORS, grad. M.E., 40-50, experienced in the design, application, installation and operation of air, gas and ammonia compressors, and compressor valves. Good opportunity. Location New York. Salary commensurate with ability. Give full information in first letter. BOX 3091, Air Conditioning & Refrigeration News.

### EQUIPMENT FOR SALE

RECORDING THERMOMETERS, Bristol, remote 7 day electric, $69. Thermostats, Mercoid, minus 10° to plus 40°, $15. Heat exchangers, Acme, 3 ton @ $27; 2 ton @ $20. Evaporative condensers, Marlo E C 5, $335. Tunnel blast freezer complete 1,800 basic rating, $535. New 1 H.P. to 7½ H.P. water cooled Universal and Copelands at less than distributor's cost. Used Westinghouse 60 ton condensing unit—bargain! 3'6" x 6'6" Jamison double batton automatic close doors with track heads for 7'2" track, 1½" cork board insulation at $95 each. All new in original factory crates. BIMEL COMPANY, 2600 Colerain Ave., Cincinnati 14, Ohio.

SEALED UNITS rebuilt and exchanged. Prompt service on Coldspot (sealed & semi-sealed), Chieftain, Gale, Tecumseh, Norge and many others. One year guarantee. Write for price list and shipping instructions. BRIGHTON, 3906 Joy Rd., Detroit 6, Michigan.

NEW BEAM scales, $22.50; ten or more, $19.50. Kelvinator new ten gallon pressure coolers $149.50. Units, new, 10 H.P., $595.00; 3 H.P., new, $295.00; 2 H.P., new, $250.00; 1½ H.P., $195.00. Servel new ¼ H.P., $75.00; ⅓ H.P., $95.00. F.O.B. GENERAL REFRIGERATOR CO., 856 N. Broad St., Philadelphia, Pa. STevensen 7-2240—2241.

1,000 LBS. ALUMINUM tubing ½" O.D. x .28" wall thickness 3 SO @ 40¢ per lb.; 100 gal. Thermal Mastic #446 in 5 & 10 gal. drums @ $2.00 per gal.; 4,000' Jarrow #B4868 gasket in 7½' lengths @ 1¢ per ft.; 1,500 flare to flare ½" connectors @ 6¢; 1,500 ¼" flare to flare connectors @ 5¢. MIDWEST INDUSTRIES, 835 Osage Ave., Kansas City, Kansas.

FOR SALE 3-HP water cooled, "Freon" Copeland machines with 3-HP 3 phase motors $248.00 each. Ten model 495 5-HP Copeland water cooled "Freon" machines equipped with 26 Copeland compressors and 5-HP 3 phase motors $278.00, all F.O.B. Kansas City, Missouri. These machines are brand new in original Copeland crates and carry the one year factory guarantee. 10% deposit required with all orders, balance C.O.D. THE NAT CORPORATION, 2710 McGee, Kansas City, Missouri.

SUBJECT TO prior sale: Hermetic Chieftain units—⅛ H. P., $44.50; ⅙ H. P., $48.50 Other well known hermetics: ⅛ H. P., fan cooled, $52.50; ¼ H. P., fan cooled, light duty, $57.50; ¼ H. P., fan cooled, heavy duty, $59.50; ⅓ H. P., fan cooled, $69.50. Open units, standard makes: ¼ H. P., $54.50; ⅓ H. P., $64.50; ½ H. P., $84.50. Above prices quoted on lots of six. All open units are 60 cycle, single phase. All above units new, carrying factory warranty. Write for unit list. Penn type 260 Apol low pressure control, $4.25. Penn type 262 Apol high pressure control, $4.25. Minneapolis-Honeywell dual pressure control, $4.50. Detroit Lubricator low pressure control, $4.25. G. E. blower fan motor with 10" fan, $4.50. Superior heat exchanger, 13" over-all, ⅜" x ⅝", $4.25. Mueller heat exchanger, 14½" over-all, ⅜" x ⅝", $5.00. Kramer Trenton panel blower complete, ½ ton, $30.00. Superior master drier ¼" flare x 1¼" x 5½", 75¢. U. S. "Freon" gauge, 4½" face, 30" vac., 150# or 300#, with corresponding temp. scale with red warning hand and mounting holes, $4.50. Scientific Instrument Co. dial thermometer, 4½" face, minus 40 to plus 120, 5 ft. tube, $4.50. 1 set U. S. "Freon" gauge, 2½" face, 100# compound and 300# pressure, temp. scale, recal. and mounting holes, $3.50 Ranco type KW-412 cold control complete, $4.00. American Injector oil separator, ¼ ton, $3.50. Cold plates 1—30" x 55", 2—30" x 64", 3 to a set, $35.00. 6—5 lb. cans Davision refrigeration silica gel, $6.00. 1—5 lb. can Davison refrigeration silica gel, $1.10. Crouse-Hinds vapor proof refrigerator light, with guard, $2.50. WALTER W. STARR, 1207 George Street, Chicago 13, Illinois.

### BUSINESS OPPORTUNITIES

MIAMI, FLORIDA—a leading refrigeration, air conditioning, television, and appliance sales and service establishment—in same Miami location ten years. Grossed $150,000 and netted $20,000 last year. Will sell for $7,500 to cover truck, equipment, and improvements plus merchandise inventory at cost—about $8,000. BOX 2992, Air Conditioning & Refrigeration News.

### MISCELLANEOUS

THIS YEAR alone we have rebuilt for leading commercial refrigeration companies 10,000 expansion valves and 15,000 dehydrators. Have we had comebacks? Certainly, but darn few. Price list for rebuilding your dehydrators: ½ ton dyrs., 90¢; 1 ton, $1.10; 2 ton, $1.60; expansion valves, $3.25—90 day guarantee. Let us buy your old expansion valves, coils, dehydrators. ALLEN REFRIGERATION PRODUCTS CO., 3074 Park Ave., Bronx 51, N. Y.

NON-REFRIGERATED MODULE supermarket fixtures, complete line. District men—give your refrigeration dealers and chain operators a complete store engineering service with a quality line of module engineered fixtures. Factory trained store planning and installation service available exclusively to you and your customers. Our salesmen are informed of this advertisement. Reply BOX 3068, Air Conditioning & Refrigeration News.

# 2 Types of Models Just Off Hotpoint Production Line

LEFT: Hotpoint's 8-cu. ft. deluxe refrigerator.

Right: Hotpoint's 10-cu. ft. combination refrigerator-freezer.

* * *

## Hotpoint Ships 2 New Refrigerators, 2 Combination Models to Dealers

CHICAGO—New exterior styling, more usable space, and adjustable stainless steel shelves are said to characterize the advancements incorporated in four new refrigerators in 8 and 10-cu. ft. sizes being shipped to dealers by Hotpoint, Inc.

Of the four deluxe models—EC8, EC10, EG8, and EG10—two are combination refrigerator - freezers, with individual doors for each compartment. All have a Y-shaped door molding, a new plastic and metal nameplate, and a chromium panel behind the handle. Cabinets are of wrap-around construction.

In announcing the models, John F. McDaniel, manager of the refrigerator department, said expanded production will assure dealers "substantially better deliveries on nearly all Hotpoint refrigerators in 1949." He noted that the company's refrigerators will be continued on allocation to distributors at least for the first quarter.

A butter conditioning compartment is located in the doors of these models allowing the homemaker to keep a pound of butter at spreading consistency. The conditioner has an individual heat control.

The new EC refrigerators have stainless steel adjustable shelves, while the combination models have aluminum shelves. Two sliding shelves are designed for adjustments in depth, leaving additional storage space for unusually high objects at the front of the refrigerator. A similar shelf is located beside the evaporator for bottle storage.

A left-over rack containing three jars with transparent lids swings out of the cabinet. Two large sliding meat and vegetable pans are located in the bottom of the refrigerators.

The combination refrigerator-freezers in 8 and 10-cu. ft. models occupy no more kitchen space than conventional models.

The EG8 has 1.5 cu. ft. of space for freezing and storing food; the EG10 has a 2-cu. ft. freezer.

Rear and sides of the general food storage compartment are refrigerated, maintaining high humidity and making possible more storage space, accoring to Hotpoint. All the foods stored in a conventional 8-cu. ft. refrigerator can be placed in the lower section of the EG8; similarly refrigeration storage capacity of the EG10 is equal to that of conventional 10-cu. ft. models, McDaniel further stated.

## Weber Fixture Names 3 To Executive Sales Posts

LOS ANGELES—Three executive appointments in the Weber Showcase & Fixture Co. sales organization have been announced here by J. L. Kaufhold, general sales manager.

Pat Peluce has been named assistant general sales manager; Fred M. Schulz, manager of dealer sales; and John D. Haidinger, advertising and sales promotion manager.

Kaufhold said that these appointments conform with company policy of filling administrative posts from its own employe-ranks.

Peluce, who has been connected with the company for the past 23 years, has served in various administrative capacities. Haidinger has been in charge of the sales promotion department. Schulz, who has been with Weber for the past nine years, was recently transferred from Chicago.

## Metals Picture--

*(Concluded from Page 1, Column 4)*

order from the Munitions Board calling for a speedup in its $3,700,000,000 program of stockpiling critical items, which include copper, lead, and zinc.

Board chairman Donald F. Carpenter said that the board will now compete with civilian industries to obtain stocks of scarce materials. He pointed out that with "the reconversion period over," the government's demands will mean "only the deferment of a few requirements" by civilian industry "so that the country will not be dangerously short of critical materials later, should there be a national emergency."

## Revere Pays 25-Cent Dividend

NEW YORK CITY—Revere Copper & Brass, Inc. has announced a quarterly dividend of 25 cents per common share payable March 1.

## Trade-Ins, Price Cutting, Operational Costs Rate As Big Problems for Most Replying to IEEDA Poll

SPOKANE, Wash.—Trade-in competition, high operating costs, extensive price cutting, and high selling costs are expected to be the most serious problems of 1949, more than half the appliance dealers replying to a recent "5-Minute Poll" conducted among its members by the Inland Empire Electrical Dealer's Association indicated.

More than 25% of them checked lack of consumer demand, insufficient operating margins, and competition from non-tax-paying cooperatives as dark clouds on the horizon.

High installation cost, high repair cost, over-franchising, and direct selling by manufacturers or distributors won the vote of more than 10%. Only 3% checked merchandise shortages.

Other results of the poll were as follows:

| Question | Approximate Percentage Answering Yes | No | Undecided |
|---|---|---|---|
| Do you expect 1949 volume to be approximately as high as 1948's volume? ..... | 60% | 30% | 10% |
| Do you feel it will be necessary to increase your advertising and promotion expenditures in 1949? | 70% | 27% | 3% |
| Do you feel it will be necessary to increase your expenditures for salesmen? ..... | 52% | 27% | 21% |

What items should receive the greatest promotional efforts in association-sponsored joint promotions? Freezers, 65%; clothes driers, dishwashers, and garbage disposal units, each about 60%; ironers, 50%; adequate wiring, 40%; washers, 25%; radios and water heaters, about 15%; ranges, refrigerators, farm electrical equipment, traffic appliances, 10% or less.

## Raysson, Salisbury, Calmer Listed In New Crosley Appointments

CINCINNATI — Appointment of three new Crosley sales staff members has been announced by W. A. Blees, vice president of the Avco Mfg. Corp. and general sales manager of the Crosley Div.

The new appointees are R. T. Calmer, who has been named assistant to the general sales manager; L. M. (Verne) Salisbury, manager of business management; and A. Raysson, promotion manager of the range section.

Calmer was previously with Consolidated Vultee Aircraft Corp. at San Diego, Calif. During his association with that firm, which began in 1942, he was supervisor of industrial engineering, assistant to the vice president of finance, and assistant to the vice president of sales.

Salisbury came to Crosley from the Bendix Radio Div. of Bendix Aviation Corp. at Towson, Md., where he had been administration manager since 1945. Prior to that he held a similar post with Frigidaire.

Raysson left the Proprietary Plastics Div. of the General American Transportation Corp. to join Crosley. From 1945 to June, 1948, he had been general sales manager of the domestic appliance (Presteline) division of the Pressed Steel Car Co.

## Binghamton Dealership Opens

BINGHAMTON, N. Y.—Kalamazoo Appliance & Heating, Inc., a new appliance store, has been opened.

## Frank Jones, Former NEMA President, Dies

NEW YORK CITY — Frank C. Jones, president and general manager of Okonite Co., Passaic, N. J., manufacturer of electrical wire and cable, died recently in Lennox Hill hospital. He was president of the National Electrical Manufacturers Association in 1935 and 1936 and had been a member of the board of governors since 1931.

## Union Pacific To Issue Freight Rate Supplement

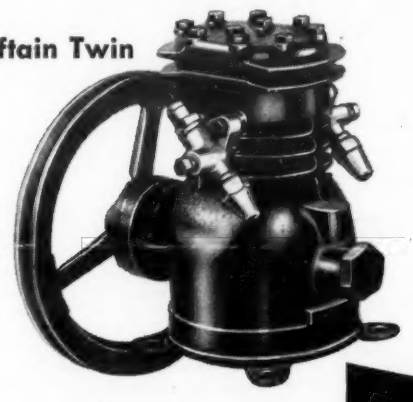
OMAHA, Neb.—Now in the course of preparation by Union Pacific Railroad is Supplement 1 to "Memorandum of Increased Rates and Charges," which will reflect changes and additions occasioned by the issuance of the New Composite Master Tariff X-162-B and X-166-C, effective Feb. 15.

This supplement will show increases authorized in Tariff of Emergency Charges X-168, effective Jan. 11, 1949. It will also contain increase table reflecting 4, 5, and 6% increase to total freight charges of 1 cent to $1,000, including a 3% table for figuring the Federal transportation tax.

The original 62-page booklet simplifying the checking of rates has been ordered by many shippers and traffic men in the refrigeration and air conditioning industry. This first supplement keeps the booklet current.

Copies of the supplement may be obtained free from W. T. Burns, general freight traffic manager, Union Pacific Railroad at Omaha.


Chieftain Twin



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